TEC Thermal Printer

B-880 SERIES

User's Manual

Original **Apr., 2000**

(Revision **Apr., 2002**)

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TOSHIBA TEC CORPORATION

Precaution

This service manual is intended for use by service technicians, and designed as a guide for repair & maintenance. The manual is intended to promote smooth service operations of the product in the market place. It is not intended for any other purpose such as development or product specifications. For questions regarding development or product specifications, please contact the TOSHIBA TEC department in charge.

This manual may be changed or revised without notice. If you find any misprints or omissions, please contact the TOSHIBA TEC Service Solution Planning Dept. (Ohito) promptly (Facsimile No. 0558-76-9842).

TEC cannot be held responsible for any trouble which have been caused by misprints or omissions.

The following related manuals contain additional specific information on using B-880 SERIES and can be referred to for more detailed information available from TOSHIBA TEC sales headquarters.

- Interface/Communication Manual
- Supply Manual
- Specifications

Safety Summary

Personal safety in handling or maintaining the equipment is extremely important. Warnings and Cautions necessary for safe handling are included in this manual. All warnings and cautions contained in this manual and written inside or outside of the printer should be read and understood before handling or maintaining the equipment.

Never modify the machine. Except for the addition of options as specifically provided for in the service manual, change or modifications to the machine are not approved. Unauthorized changes or modifications may not comply with your country's safety standards.

Safety Precaution

Electrical equipment is dangerous. Electrical shock from such equipment can cause death. Never operate electrical equipment unless authorized to do so by a responsible authority.
In emergency work on electrical equipment is authorized, be sure that it is performed in strict compliance with approved safety regulations.

The following safety precautions will help to ensure proper use of the printer:

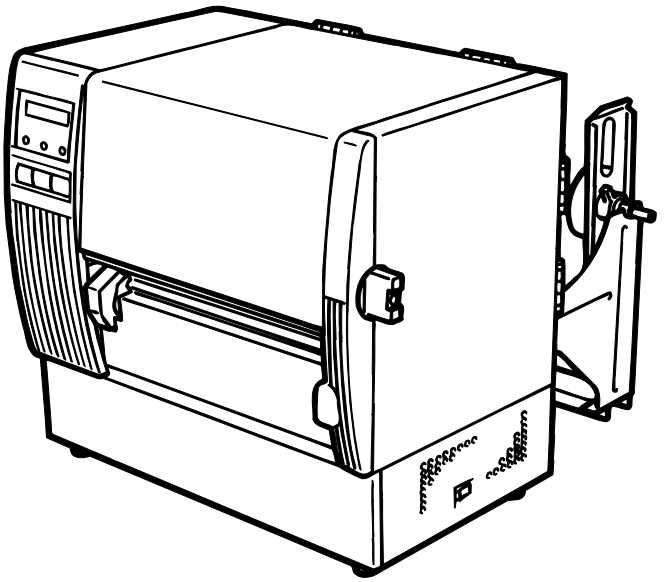
- Turn off the printer before 1) opening the top cover for any reason, 2) attaching/detaching any cable and memory cards, and 3) changing the dip switch setting.
- Disconnect the power cord whenever you are working inside the printer.
- Keep your work environment static free.

TEC

TEC Thermal Printer

B-870/880-QQ SERIES

Owner's Manual



TOSHIBA TEC CORPORATION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operations of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. (for USA only)

Changes or modifications not expressly approved by manufacturer for compliance could void the user's authority to operate the equipment.

"This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations."

"Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur de Canada."

(for CANADA only)

WARNING!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CAUTION:

Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.

As an ENERGY STAR® Partner, TOSHIBA TEC has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

-- Outline of the International ENERGY STAR® Office Equipment Program --

The International ENERGY STAR® Office Equipment Program is an international program that promotes energy saving through the penetration of energy efficient computers and other office equipment. The program backs the development and dissemination of products with functions that effectively reduce energy consumption. It is an open system in which business proprietors can participate voluntarily. The targeted products are office equipment such as computers, monitors, printers, facsimiles, copiers, scanners, and multifunction devices. Their standards and logos are uniform among participating nations.

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570 Ohito, Ohito-cho, Tagata-gun, Shizuoka-ken, JAPAN

Safety Summary

Personal safety in handling or maintaining the equipment is extremely important. Warnings and Cautions necessary for safe handling are included in this manual. All warnings and cautions contained in this manual should be read and understood before handling or maintaining the equipment.
Do not attempt to effect repairs or modifications to this equipment. If a fault occurs that cannot be rectified using the procedures described in this manual, turn off the power, unplug the machine, then contact your authorized TOSHIBA TEC representative for assistance.

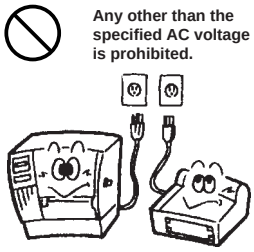
Meanings of Each Symbol

This symbol indicates warning items (including cautions).
Specific warning contents are drawn inside the △ symbol.
(The symbol on the left indicates a general caution.)

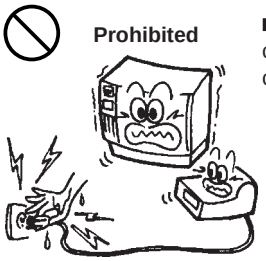
This symbol indicates prohibited actions (prohibited items).
Specific prohibited contents are drawn inside or near the ⃠ symbol.
(The symbol on the left indicates “no disassembling”.)

This symbol indicates actions which must be performed.
Specific instructions are drawn inside or near the ● symbol.
(The symbol on the left indicates “disconnect the power cord plug from the outlet”.)

WARNING This indicates that there is the risk of **death** or **serious injury** if the machines are improperly handled contrary to this indication.



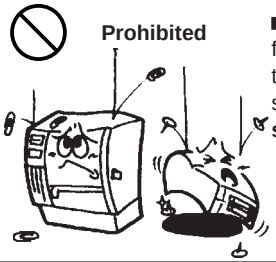
■ Do not use voltages other than the voltage (AC) specified on the rating plate, as this may cause **fire** or **electric shock**.



■ Do not plug in or unplug the power cord plug with wet hands as this may cause **electric shock**.

■ If the machines share the same outlet with any other electrical appliances which consume large amounts of power, the voltage will fluctuate widely each time these appliances operate. Be sure to provide an exclusive outlet for the machine as this may cause the machines to **malfunction**.

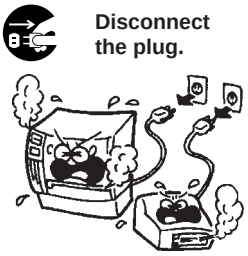
■ Do not place metal objects or water-filled containers such as flower vases, flower pots or mugs, etc. on top of the machines. If metal objects or spilled liquid enter the machines, this may cause **fire** or **electric shock**.



■ Do not insert or drop metal, flammable or other foreign objects into the machines through the ventilation slits, as this may cause **fire** or **electric shock**.

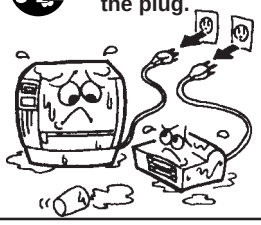
■ Do not scratch, damage or modify the power cords. Also, do not place heavy objects on, pull on, or excessively bend the cords, as this may cause **fire** or **electrical shock**.

■ If the machines are dropped or their cabinets damaged, first turn off the power switches and disconnect the power cord plugs from the outlet, and then contact your authorized TOSHIBA TEC representative for assistance. Continued use of the machine in that condition may cause **fire** or **electric shock**.



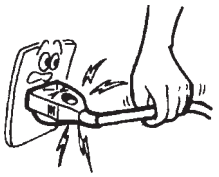
■ Continued use of the machines in an abnormal condition such as when the machines are producing smoke or strange smells may cause **fire** or **electric shock**. In these cases, immediately turn off the power switches and disconnect the power cord plugs from the outlet. Then, contact your authorized TOSHIBA TEC representative for assistance.

Disconnect the plug.



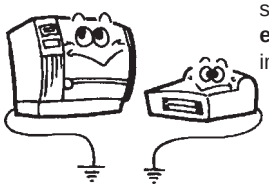
■ If foreign objects (metal fragments, water, liquids) enter the machines, first turn off the power switches and disconnect the power cord plugs from the outlet, and then contact your authorized TOSHIBA TEC representative for assistance. Continued use of the machine in that condition may cause **fire** or **electric shock.**

Disconnect the plug.



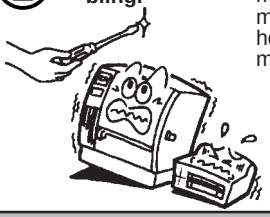
■When unplugging the power cords, be sure to hold and pull on the plug portion. Pulling on the cord portion may cut or expose the internal wires and cause **fire** or **electric shock**.

Connect a grounding wire.



■ Ensure that the equipment is properly grounded. Extension cables should also be grounded. **Fire** or **electric shock** could occur on improperly grounded equipment.

No disassembling.



■ Do not remove covers, repair or modify the machine by yourself. You may be **injured** by high voltage, very hot parts or sharp edges inside the machine.

CAUTION This indicates that there is the risk of personal **Injury** or **damage** to objects if the machines are improperly handled contrary to this indication.

Precautions

The following precautions will help to ensure that this machine will continue to function correctly.

- Try to avoid locations that have the following adverse conditions:
  * Temperatures out of the specification * Direct sunlight * High humidity
  * Shared power source * Excessive vibration * Dust/Gas
- The cover should be cleaned by wiping with a dry cloth or a cloth slightly dampened with a mild detergent solution. NEVER USE THINNER OR ANY OTHER VOLATILE SOLVENT on the plastic covers.
- USE ONLY TOSHIBA TEC SPECIFIED paper and ribbons.
- DO NOT STORE the paper or ribbons where they might be exposed to direct sunlight, high temperatures, high humidity, dust, or gas.
- Ensure the printer is operated on a level surface.
- Any data stored in the memory of the printer could be lost during a printer fault.
- Try to avoid using this equipment on the same power supply as high voltage equipment or equipment likely to cause mains interference.
- Unplug the machine whenever you are working inside it or cleaning it.
- Keep your work environment static free.
- Do not place heavy objects on top of the machines, as these items may become unbalanced and fall causing **injury**.
- Do not block the ventilation slits of the machines, as this will cause heat to build up inside the machines and may cause **fire**.
- Do not lean against the machine. It may fall on you and could cause **injury**.
- Care must be taken not to injure yourself with the printer paper cutter.
- Unplug the machine when it is not used for a long period of time.

Request Regarding Maintenance

- Utilize our maintenance services.
  After purchasing the machine, contact your authorized TOSHIBA TEC representative for assistance once a year to have the inside of the machine cleaned. Otherwise, dust will build up inside the machines and may cause a **fire** or a **malfunction**. Cleaning is particularly effective before humid rainy seasons.
- Our preventive maintenance service performs the periodic checks and other work required to maintain the quality and performance of the machines, preventing accidents beforehand.
  For details, please consult your authorized TOSHIBA TEC representative for assistance.
- Using insecticides and other chemicals
  Do not expose the machines to insecticides or other volatile solvents. This will cause the cabinet or other parts to deteriorate or cause the paint to peel.

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CAUTION:

1. *This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
2. *The contents of this manual may be changed without notification.*
3. *Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.*

1. INTRODUCTION

Thank you for choosing the TEC B-872/882 Series thermal/transfer printer. This new generation high performance/quality printer is equipped with the latest hardware including the newly developed high density (12 dot/mm, 305 dot/inch) edge print head. This will allow very clear print at a maximum speed of 203.2 mm/sec. (8 inch/sec.). Other standard features include an automatic ribbon saver and external media supply.
Optional features include a strip mechanism and Cutter mechanism.
This manual contains general set-up and maintenance information and should be read carefully to help gain maximum performance and life from your printer. For most queries please refer to this manual and keep it safe for future reference.

1.1 APPLICABLE MODEL

- B-872-QQ
- B-882-TS10-QQ
- B-882-TS10-QQ-US

Model name description

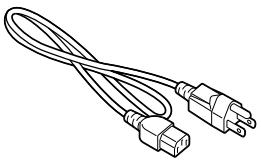
B - 8 7 2 - T S 1 0 - Q Q

- Destination Code
  QQ-US: North America block, QQ: Except for QQ-US
- Issue mode
  S: Batch
- Resolution
  T: 12 dot/mm (305 dpi)
- Thermal direct/Thermal transfer
- Printer Type
  7: Base Model, 8: Enhanced Model

1.2 ACCESSORIES

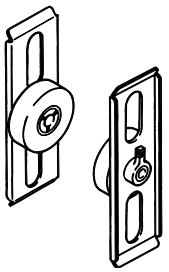
Owner's Manual
(EO1-33017)

Power Cord



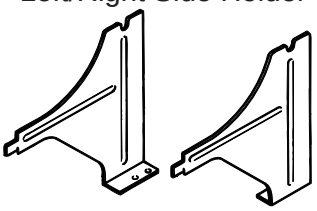
Print Head Cleaner
(24089500013)

Media Holder

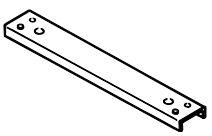


Holder Shaft

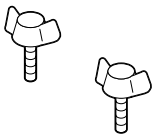
Left/Right Side Holder



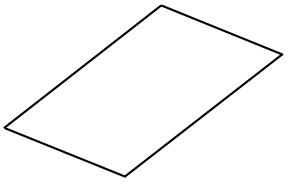
Holder Base



Thumbscrew
(M-4x6)



Quality control report



2. SPECIFICATIONS

2.1 PRINTER

Item \ Model	B-872/882-QQ
Supply voltage	Universal (automatic switching) 85-138 V, 50/60 Hz 187-276 V, 50/60 Hz Be sure to use a power cord which meets the standard.
Power consumption	3.5 A, 260 W maximum (standby: 360 mA, 20 W maximum)
Operating temperature range	5˚C ~ 40˚C
Relative humidity	25% ~ 85%RH (no condensation)
Print head	Thermal print head 12 dots per mm (305 dots per inch)
Printing methods	Thermal direct or Thermal transfer
Print speeds	76.2 mm/sec. (3 inch/sec.), 101.6 mm/sec. (4 inch/sec.), 203.2 mm/sec. (8 inch/sec.) When the media width is 160 mm or less.
Maximum print width	213.3 mm (8.40 inches)
Dispensing modes	Batch (Continuous), Strip (On-demand) and Cut modes (Both cut and strip modes are available only when their respective modules are fitted.)
Message display	20 characters x 1 line
Dimensions	437 mm (width) x 282 mm (depth) x 395 mm (height)
Weight	B-872: 25 kg (without media and ribbon) B-882: 26 kg (without media and ribbon)
Available bar-code types	JAN8, JAN13, EAN8, EAN8 + 2 digits, EAN8 + 5 digits EAN13, EAN13 + 2digits, EAN13 + 5 digits UPC-E, UPC-E + 2 digits, UPC-E + 5 digits UPC-A, UPC-A + 2 digits, UPC-A + 5 digits MSI, ITF, NW-7, CODE39, CODE93, CODE128 EAN128, Industrial 2 to 5, Customer Bar Code, POSTNET, KIX CODE, RM4SCC (ROYAL MAIL 4STATE CUSTOMER CODE),
Two-dimensional code	Data Matrix, PDF417, QR Code, Maxi Code, Micro PDF417, CP Code (B-872 only)
Fonts	Times Roman (6 sizes), Helvetica (6 sizes), Presentation (1 size), Letter Gothic (1 size), Prestige Elite (2 sizes), Courier (2 sizes), OCR (2 types), Writable characters (40 types, 2-byte character is available: B-882 only), Outline font (B-872: 1 type, B-882: 4 types), Price font (3 types; B-882 only)
Rotations	0˚, 90˚, 180˚, 270˚
Standard interfaces	Serial interface (RS-232C) Parallel interface (Centronics) Expansion I/O interface Flash memory card interface (B-872 only)
Optional interface	PCMCIA interface (B-882 only)

∗ *Data Matrix™ is a trademark of International Data Matrix, Inc.*
PDF417 is a trademark of Symbol Technologies, Inc.

■ Auto Ribbon Saving Mode

Auto ribbon saving function is activated when it is selected by DIP switch (Refer to page 4-1) and none print area extends for more than 20 mm.

NOTES: *1. To activate ribbon saving function at a speed of 8"/sec., the no print area should extend more than 25 mm.*

2. Depending on the relationship between the outer diameter of rewound ribbon and print speed, ribbon usage may vary as follows:

Print speed	Ribbon loss
3"/sec	Approx. 5 mm
4"/sec	Approx. 10 mm
8"/sec	Approx. 23 mm

3. For the B-882, contact your authorised TOSHIBA TEC representative to change the Operation Panel setting.

2.2 OPTION

Option Name	Type	Description	Source
Cutter module	B-4208-QM	A stop and cut swing cutter	See NOTE 1.
Strip module	B-4908-H-QM	This module strips the label from the backing paper with the take-up block and strip block.	See NOTE 1.
D-RAM PC Board (B-872 only)	FMBC0067801	A 2MB RAM upgrade which enhances the image handling capability of the printer.	See NOTE 2.
Flash memory card (B-872 only)	————	A flash memory card (1MB and 4MB) for storing logos, writable characters and formats.	See NOTE 3.
PCMCIA interface board (B-882 only)	B-8700-PC-QM	This board enables the following PCMCIA cards to be used. * LAN card: 3 COM EtherLink®III (recommended) * ATA card: Conforming to PC card ATA standard * Flash memory card: 4MB card (See Page 10-1.)	See NOTE 1.

NOTES: *1. Available from your nearest TOSHIBA TEC representative or TOSHIBA TEC Head Quarters.*

2. Available from TOSHIBA TEC Parts Center.

3. When purchasing flash memory card locally, select one having the specifications described at page 9-1.

2.3 MEDIA

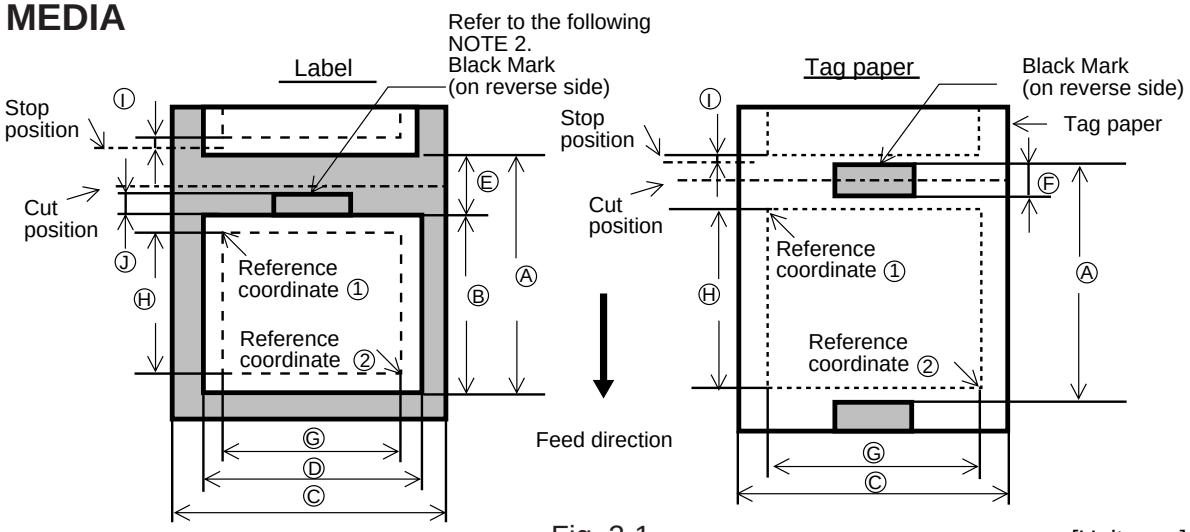


Fig. 2-1

[Unit: mm]

Item \ Label dispensing mode				Batch mode	Strip mode	Cut mode
Ⓐ: Span of one label/tag			B-872	10.00 ~ 999.0	25.4 ~ 999.0	Label: 38 ~ 999.0 Tag: 25.4 ~ 999.0
			B-882	10.00 ~ 1368.0	25.4 ~ 1368.0	Label: 38 ~ 1368.0 Tag: 25.4 ~ 1368.0
Ⓑ: Label length			B-872	7.5 ~ 996.5	22.9 ~ 996.5	25.0 ~ 993.0
			B-882	7.5 ~ 1366.0	22.9 ~ 1366.0	25.0 ~ 1362.0
Ⓒ: Width including backing paper				101.6 ~ 225.0		
Ⓓ: Label width				98.6 ~ 222.0		
Ⓔ: Gap length				2.5 ~ 20.0	2.5 ~ 20.0	6.0 ~ 20.0
Ⓕ: Black mark length (Tag paper)				2.5 ~ 10.0		
Ⓖ: Effective print width				10.0 ~ 213.3		
Ⓗ: Effective print length	Label	Standard	B-872	5.5 ~ 320.0	20.9 ~ 320.0	23.0 ~ 320.0
			B-882	5.5 ~ 1364.0	20.9 ~ 1364.0	23.0 ~ 1364.0
		Max. memory	B-872	5.5 ~ 661.3	20.9 ~ 661.3	23.0 ~ 661.3
	Tag	Standard	B-872	8.0 ~ 320.0	23.4 ~ 320.0	23.4 ~ 320.0
			B-882	8.0 ~ 1364.0	———	23.4 ~ 1364.0
		Max. memory	B-872	8.0 ~ 661.3	23.4 ~ 661.3	23.4 ~ 661.3
Ⓘ: Print speed up/slow down area				1.0		
Ⓙ: Black mark length (Label)				Refer to the following NOTE 2.		
Maximum effective length for on the fly issue		Standard	B-872	160.0		
			B-882	682.0		
		Max. memory	B-872	330.6		
Outer roll diameter				Ø200 Max.		
Thickness	Label			0.13 ~ 0.17		
	Tag			0.10 ~ 0.17		

NOTES: *1. The media specification other than above are unchanged.*

2. When marking black marks on label rolls, the following requirements must be satisfied.

When the gap length is less than 4 mm:

The black mark length should be longer than the gap length.

When the gap length is 4 mm or more:

The black mark should not overlap the gap for more than 4 mm and the following label.

3. When issuing thermal labels at 8"/sec., the print stop position should be set to a minimum of 1 mm inside the label.

2.4 RIBBON

Type	Spool type
Width	115 mm ~ 224 mm
Length	300 m
Outer diameter	Ø72 mm (max.)

NOTES: *1. "On the fly issue" means that the printer can draw and print without stopping between labels.*

2. To ensure print quality and print head life use only TOSHIBA TEC specified media and ribbons.

3. When using the cutter ensure that label length Ⓑ plus inter label gap length Ⓔ exceeds 35 mm. (i.e. label pitch should be greater than 35 mm.)

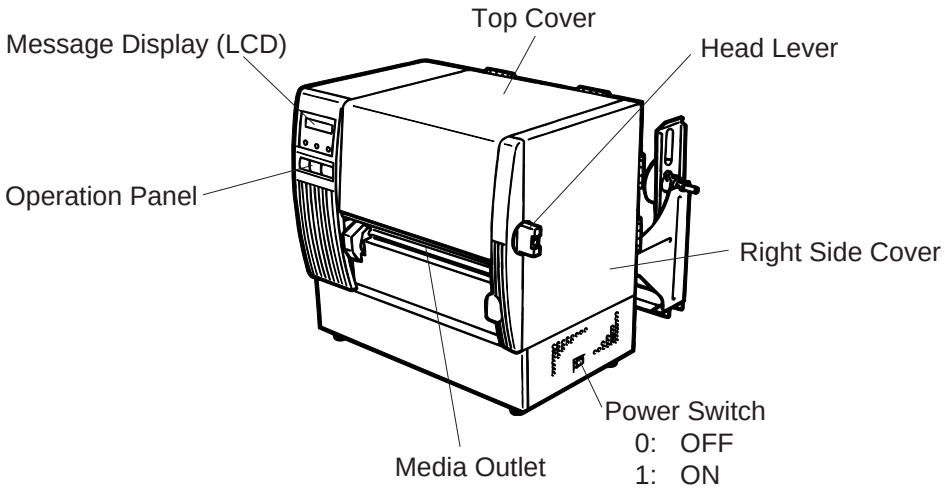
4. Use of rough media for the ribbon saving issue may cause ribbon smudges.

5. To avoid ribbon wrinkles use the ribbon which is wider than media by 5mm or more. However, too much difference in width between the two may cause wrinkles.

3. OVERVIEW

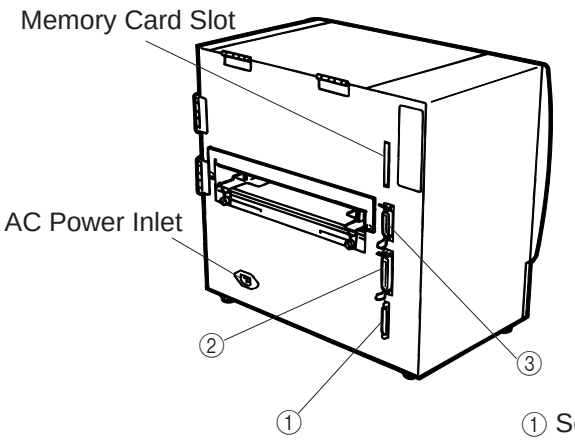
3.1 FRONT/REAR VIEW

Front View

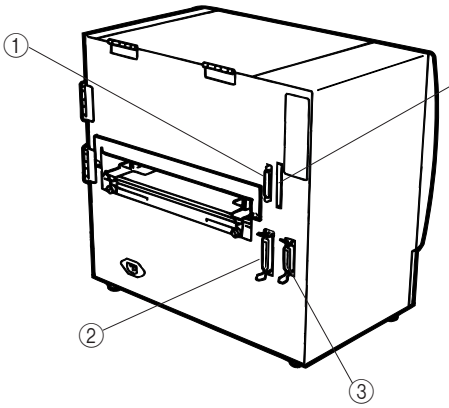


Rear View

[B-872]



[B-882]



① Serial Interface Connector (RS-232C)
② Parallel Interface Connector (Centronics)
③ Expansion I/O Interface Connector

Fig. 3-1

3.2 OPERATION PANEL

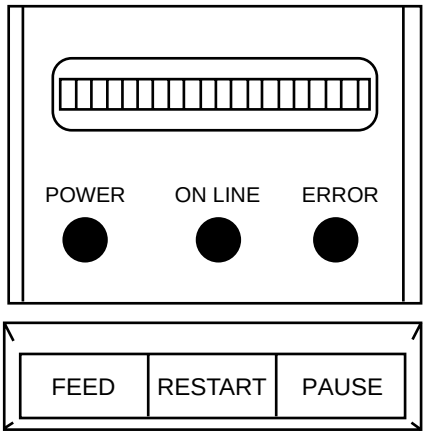


Fig. 3-2

MESSAGE DISPLAY (LCD)
When power is turned on and it is ready to print, “ON LINE” is displayed.

POWER LED (Green)
Lights when the power is turned on.

ON-LINE LED (Green)
1) Flashes when communicating with a host computer.
2) On while printing.

ERROR LED (Red)
Lights when a communication error occurs, when the media/ribbon ends or the printer does not operate correctly.

FEED Key
Feeds paper.

RESTART Key
Resets the printer when paused or when an error occurs.
Used to set the threshold. (Refer to page 12-6)

PAUSE Key
Pauses printing.
Message display shows “PAUSE” and an unprinted count.
Used to set the threshold. (Refer to page 12-6)

4. DIP SWITCH FUNCTIONS (B-872 only)

The DIP switches are located to the right of the Guide Wheel.

WARNING!

Turn the POWER OFF before switching the functions.

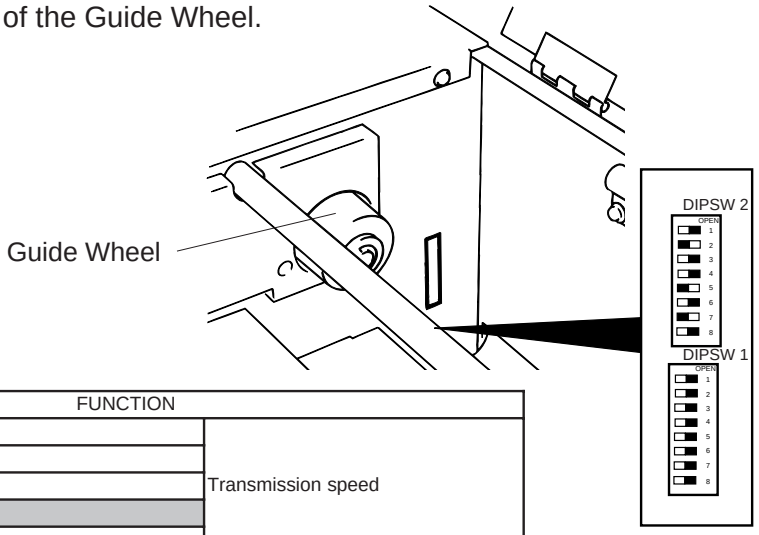


Fig. 4-1

(1) DIP SW 2

No.	ON/OFF		FUNCTION	
1	1	2		Transmission speed
	OFF	OFF	2400 BPS	
	ON	OFF	4800 BPS	
2	**OFF**	**ON**	**9600 BPS**	
	ON	ON	19200 BPS	
3	**OFF**		**1 bit**	Stop bit length
	ON		2 bits	
4	**OFF**		**7 bits**	Data length
	ON		8 bits	
5	**OFF**		**Without**	Parity check
	ON		**With**	
6	**OFF**		**EVEN**	Parity check (effective when DIP SW #5 is set to ON.)
	ON		ODD	
7	7	8		Data protocol
	OFF	OFF	XON/XOFF (No XON is output at the power on time.) (No XOFF is output at the power off time.)	
	ON	**OFF**	**READY/BUSY (DTA) (No XON is output at the power on time.) (No XOFF is output at the power off time.) READY/BUSY (RTS) (No XON is output at the power on time.) (No XOFF is output at the power off time.)**	
8	OFF	ON	XON/XOFF+READY/BUSY (XON is output at the power on time.) (XOFF is output at the power off time.)	
	ON	ON	XON/XOFF (XON is output at the power on time.) (XOFF is output at the power off time.)	

(2) DIP SW 1

No.	ON/OFF			FUNCTION	
1	**OFF**			**Without**	Auto ribbon save function
	ON			With	
2	2	3	4		Language to display LCD error message
	OFF	**OFF**	**OFF**	**English**	
	ON	OFF	OFF	German	
3	OFF	ON	OFF	French	
	ON	ON	OFF	Dutch	
	OFF	OFF	ON	Spanish	
4	ON	OFF	ON	Japanese	
	OFF	ON	ON	Italian	
	ON	ON	ON	Not used	
5	**OFF**			**Without**	Auto media feed after a cut issue (See page 8-4)
	ON			With	
6	**OFF**			**Without**	Head up function in cut mode Refer to Note 2.
	ON			With	
7	**OFF**			**Fixed type**	Media sensor selection
	ON			Movable type	
8	**OFF**			**Must be set to OFF**	
	ON				

NOTES: *1. The shaded settings are the factory default settings. "OFF" means "OPEN".*
2. The Dip switch #1-6 functions in accordance with equipment to be used.

5. SET UP PROCEDURE

5.1 REQUIREMENTS FOR OPERATION

The B-872/882 has the following requirements:

- The host computer must have a serial port or centronics parallel port.
- To communicate with host, either an RS-232C cable or Centronics cable is required.
  (1) RS-232C cable.....25 pins
  (2) Centronics cable .....36 pins
- To print the format, create the complete program using the interface/communication manual.

■ Interface Cables

To prevent radiation and reception of electrical noise, the interface cables must meet the following requirements:

- Fully shielded and fitted with metal or metalised connector housings.
- Kept as short as possible.
- Should not be bundled tightly with power cords.
- Should not be tied to power line conduits.

■ RS-232C Cable description

The serial data cable used to connect the printer to the host computer should be one of the following two types:

NOTE: *Use an RS-232C cable with imperial (inch) connector securing screws.*

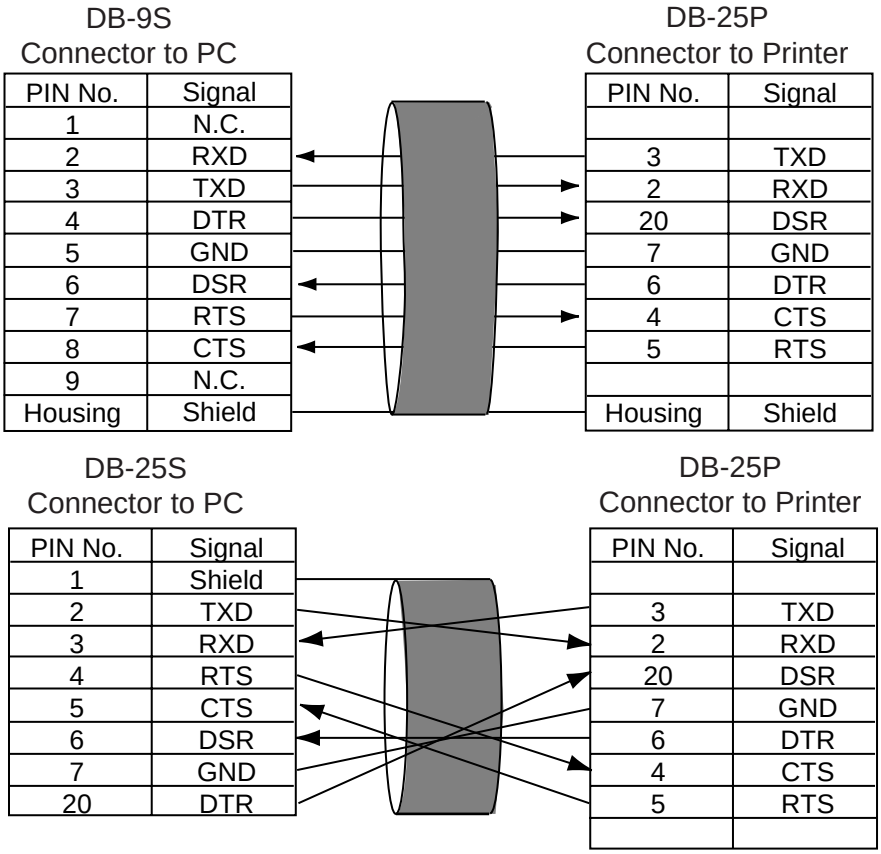


Fig. 5-1

5.2 SETTING UP THE PRINTER

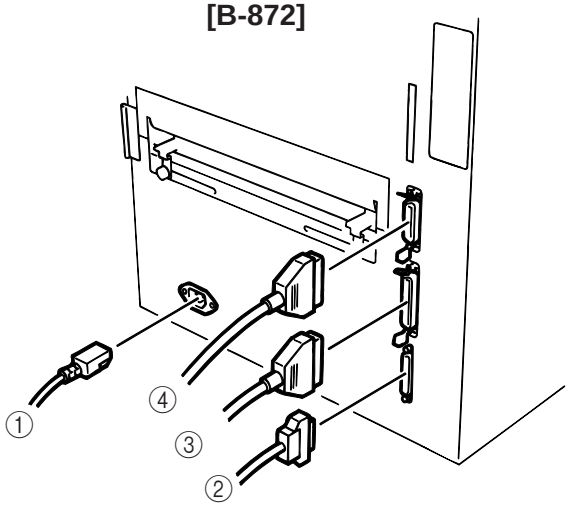
- Place the printer on a flat, stable surface.
- Use a grounded electrical outlet do not use adapter plug.
- Be sure there is adequate room around the printer for easy operation and maintenance.
- Keep your work environment static free.

6. INSTALLATION PROCEDURE

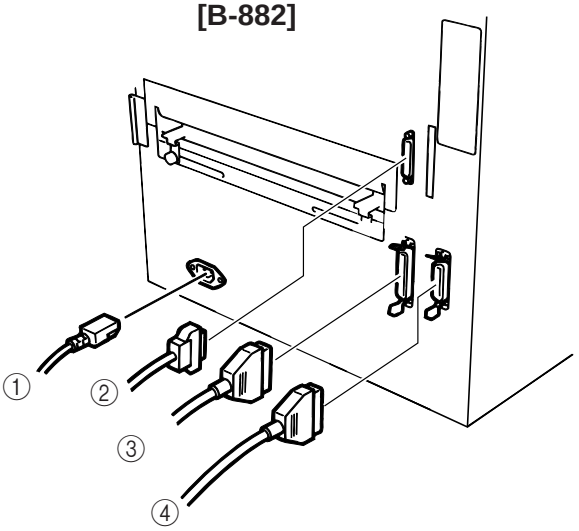
6.1 CONNECTING THE POWER CORD AND CABLES

WARNING!
*Turn the **POWER SWITCH to OFF** before connecting the power cord or cables.*

[B-872]



[B-882]



① Power Cord
② Serial I/F Cable (RS-232C)
③ Parallel I/F Cable (Centronics)
④ Expansion I/O Cable

Fig. 6-1

NOTE: *Different cables cannot be used at the same time.*

6.2 HOLDER STAND INSTALLATION

Fit the left and right side holders into the dowels of the holder base and fasten the side holders to the holder base with the thumbscrews.

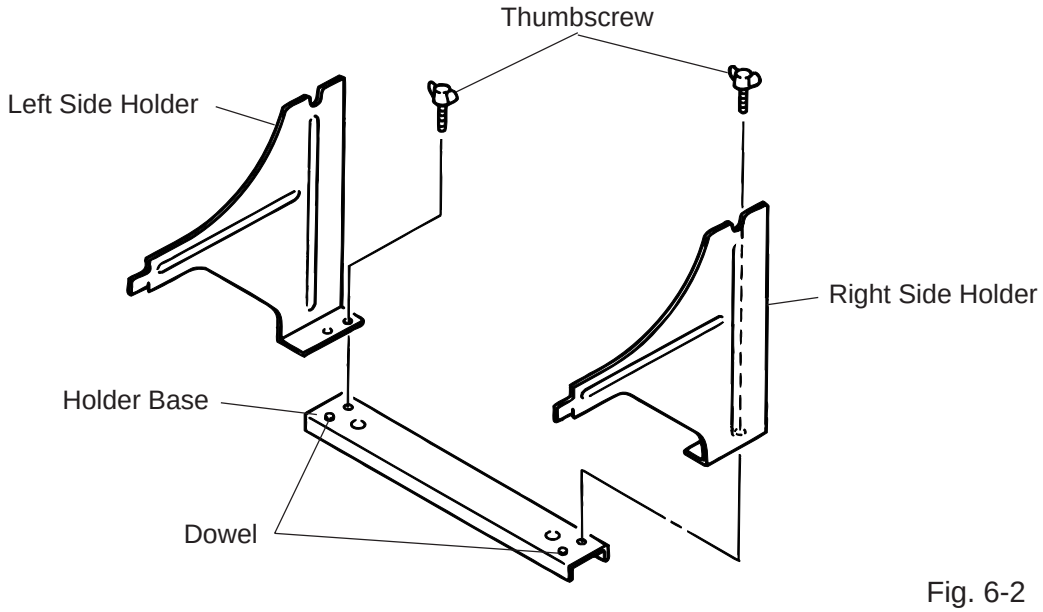


Fig. 6-2

7. LOADING THE RIBBON

WARNING!
1. Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.
2. To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.

There are two types of media available for printing on, these are standard media and direct thermal media (a chemically treated surface). **DO NOT LOAD** a ribbon when using a direct thermal media.

1. Turn the power off and open both the top cover and the right side cover.
2. Set the head lever to the "OPEN" position and release the head lock plate.

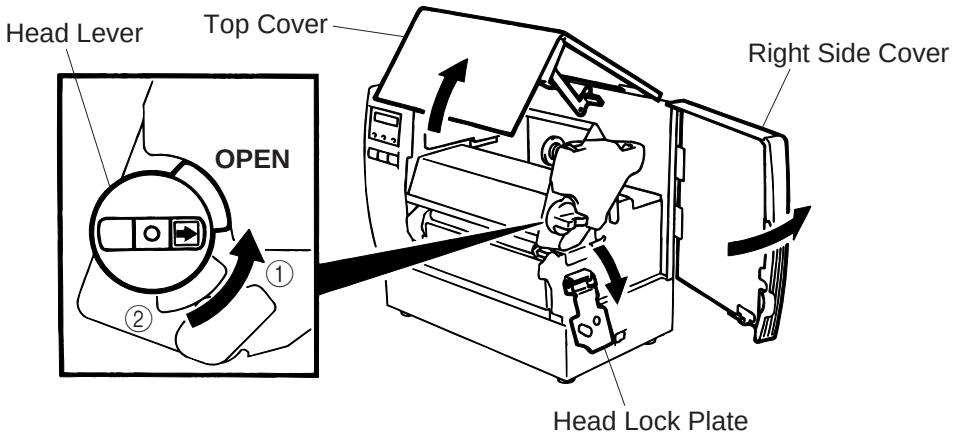


Fig. 7-1

Head Lever Position

①: Labels or thin tag paper
②: Thick tag paper
OPEN: Ribbon/media replacement

3. As Fig. 7-2 shows, unroll and loosen the ribbon a little.
4. Insert the ribbon under the print block so that the ribbon supply end is positioned backside of the printer.

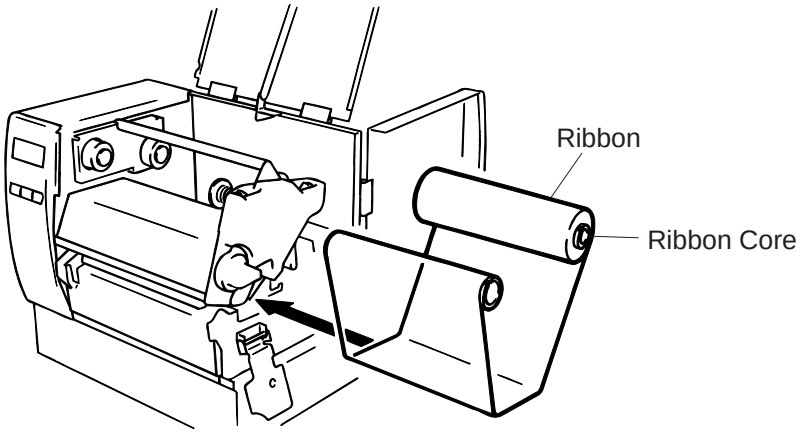


Fig. 7-2

5. Push the ribbon core against the spring guide wheel, align the protrusion of the guide wheel with the notch of the ribbon core, then set the ribbon.
6. To remove the slack of the ribbon, turn the ribbon core in the direction indicated by the arrow.
7. If the ribbon wrinkles while printing, move the ribbon levers back or forth until the wrinkle is removed.

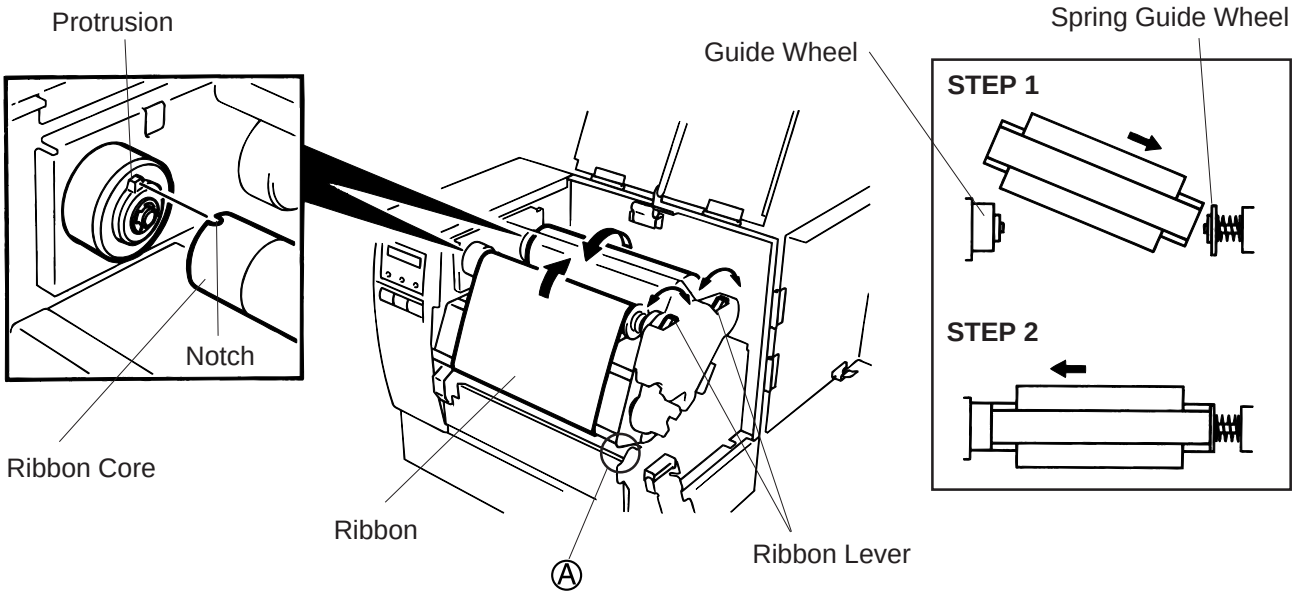


Fig. 7-3

NOTE: *When removing the ribbon, be careful not to snag the ribbon on the part Ⓐ.*

8. Set the head lock plate.
9. Turn the head lever to the proper position depending on the used media. (Refer to Fig. 7-1)
   ①: Labels or thin tag paper
   ②: Thick tag paper

> ***CAUTION:*** *When using labels ensure that the head lever is set to position ①.*

8. LOADING THE MEDIA

WARNING!

1. *Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.*
2. *To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.*

1. Install the holder stand on the rear of the printer.
2. Loosen the screw Ⓐ and slide the media guides outside.

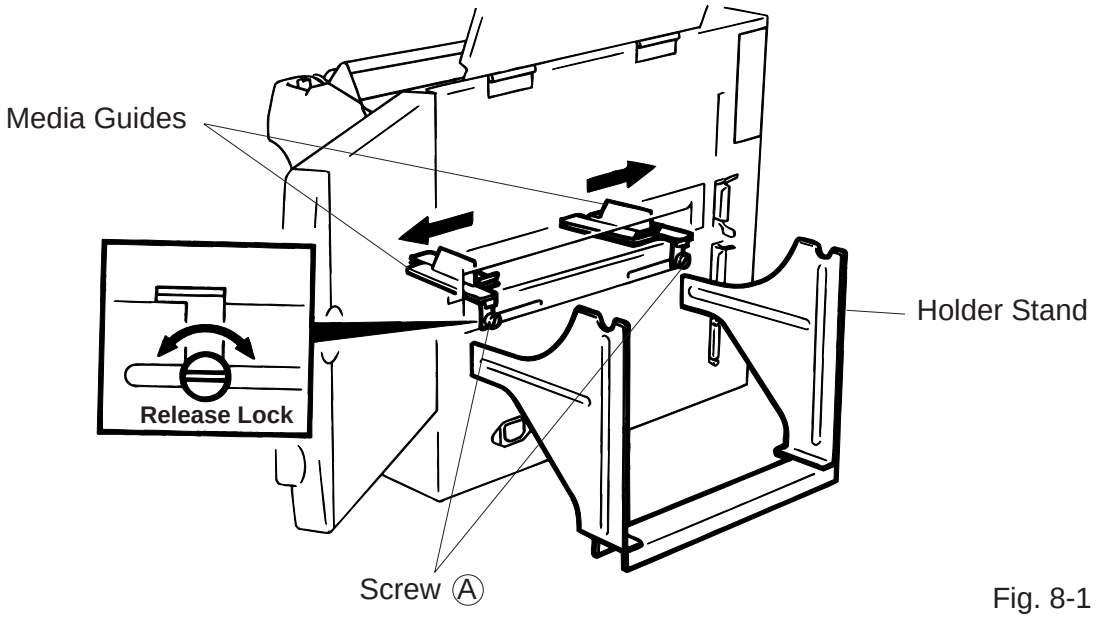


Fig. 8-1

CAUTION:
DO NOT MOVE *the Media Guides using the screw Ⓐ .*

3. Lock the Media Holder securely with the Lock Lever.
4. Pass the Holder Shaft through the Media, then set one of the Media Holders and lock it securely with the Lock Lever.

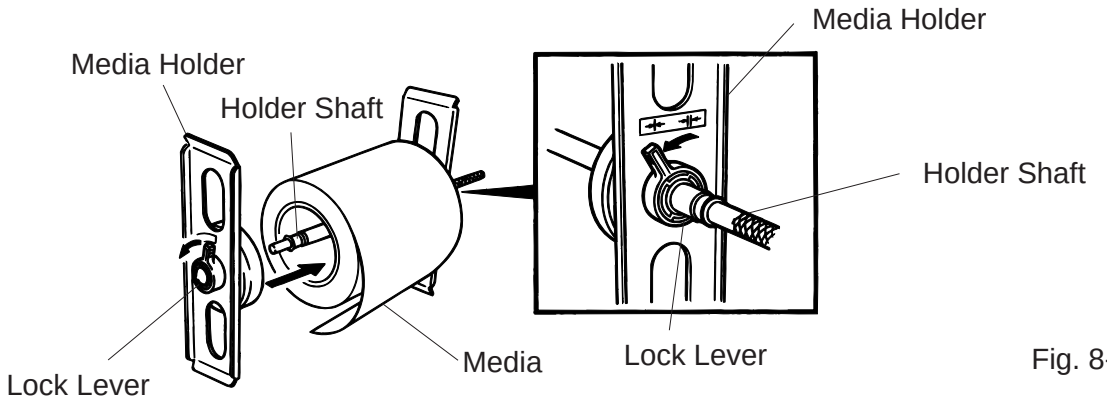


Fig. 8-2

5. Turn the Lock Levers of the Media Holders to the unlock position and readjust the Media position to the center. Then lock the Media Holders securely with the Lock Levers. Fit the Media Guides to the Media. Tighten the screw Ⓐ firmly.

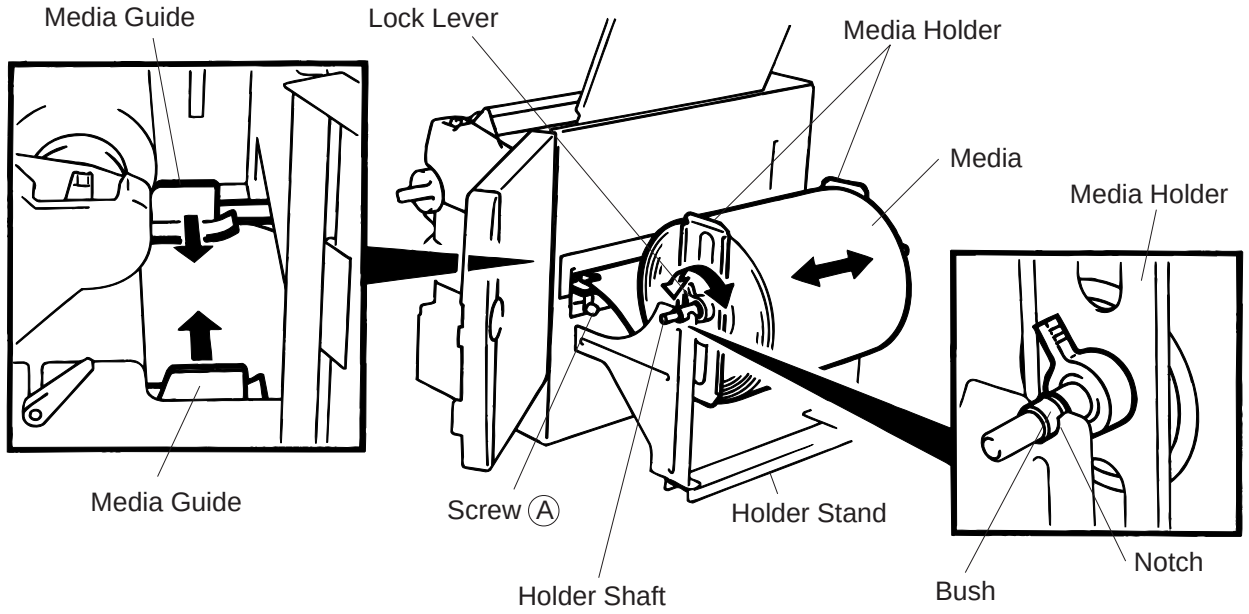


Fig. 8-3

NOTE: *Set in the bushes of the Holder Shaft into notches of the Holder Stand securely.*

6. The black mark/feed gap sensor is selectable between the fixed type and the movable type by changing the DIP switch setting on the B-872. For the B-882, contact your authorized TOSHIBA TEC representative to change the Operation Panel setting. When the fixed type is selected, the black mark sensor is located at the center of the media and the feed gap sensor is at 10 mm left to the black mark sensor. The movable sensor can be located anywhere between the left end of the effective print width and the fixed sensor.
   After changing the sensor type, the sensitivity of the sensor must be adjusted. In this case call a TOSHIBA TEC authorized service representative.

7. Set the black mark/feed gap sensor to the correct position by turning the adjusting knob. Turning the knob right will move the sensor towards the center of the media while turning left will move it away from the center of the media.

■ An easy way to set the black mark sensor position

① Pull the media about 500 mm out of the front of the printer, turn the media back on it's self and feed it under the print head past the sensor so that the black mark can be seen from above.

② Adjust the sensor position to that of the black mark (the upper hole indicates the position of the black mark sensor).

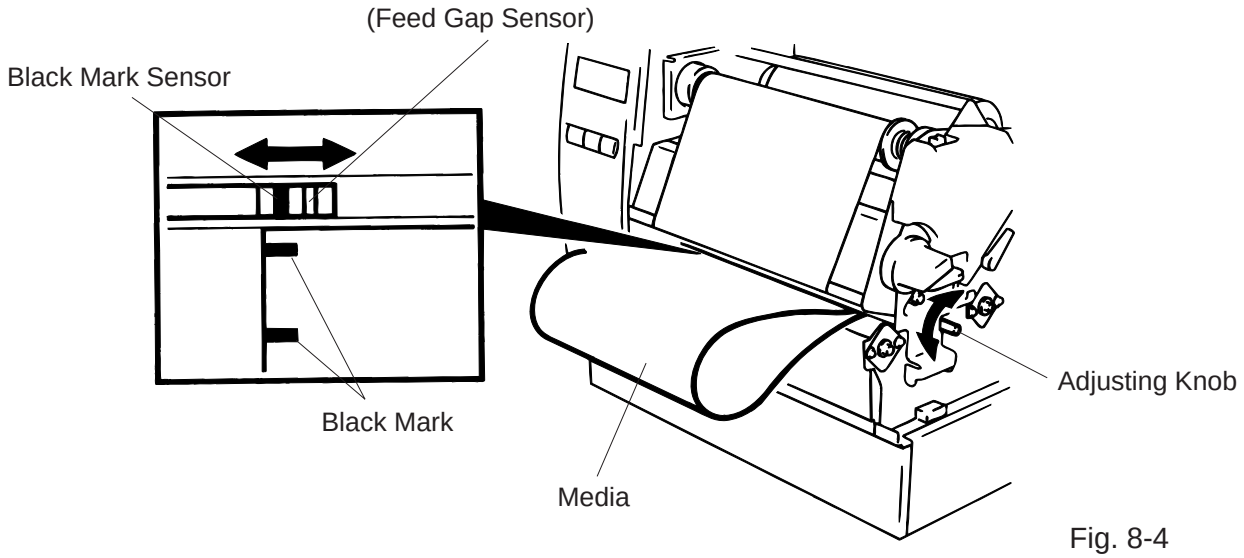


Fig. 8-4

NOTE: *Make sure to set the sensor to detect the center of the black mark, otherwise a paper jam error could occur.*

■ Setting the feed gap sensor position

Adjust the sensor to detect on the gap (the lower hole indicates the position of the feed gap sensor).

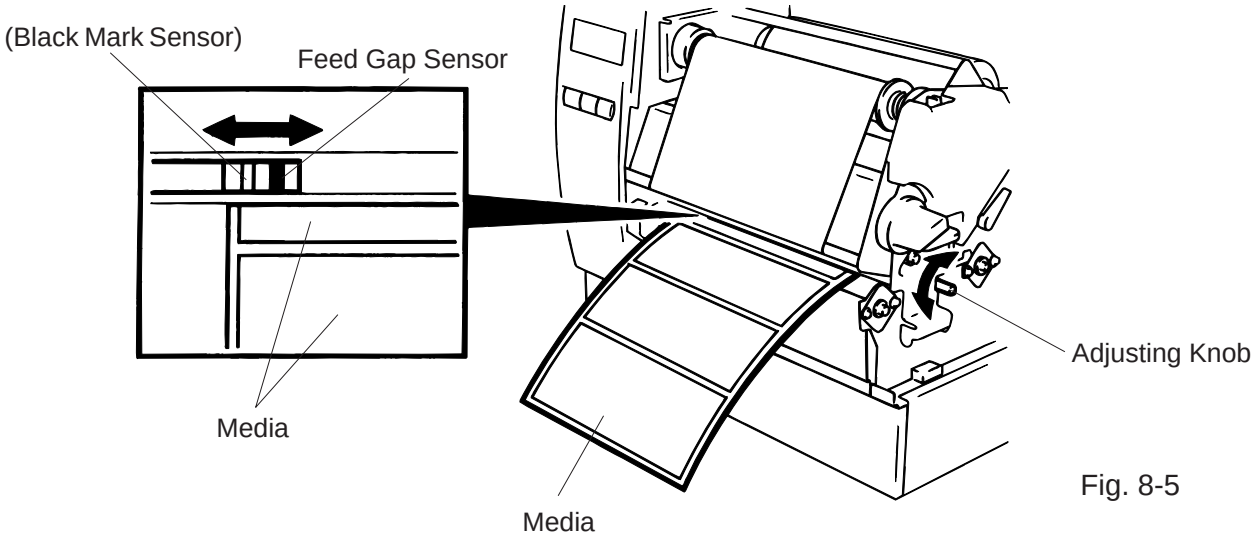


Fig. 8-5

8. The media is now loaded and the sensor position is set.

   Batch type:

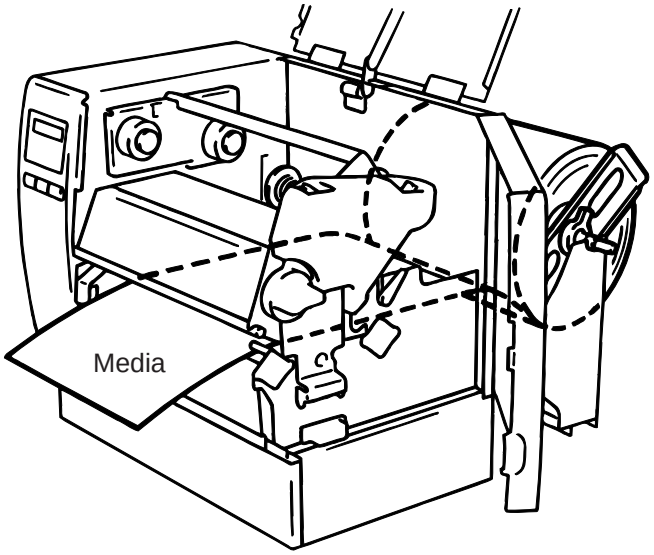


Fig. 8-6

Cutter type: Where a cutter is fitted load the media as standard and feed it through the cutter module.

NOTES: *1. Be sure to cut the backing paper of label. Cutting label will cause the glue to stick to the cutter, which may affect the cutter quality and shorten the cutter life.*

2. If the top edge of label winds onto the platen in cut issue, set the DIP SW 1-5 of the B-872 to ON. For the B-882, contact your authorized TOSHIBA TEC representative to change the Operation Panel setting.

3. Use of tag paper with the thickness exceeding the specified valve may affect the cutter life.

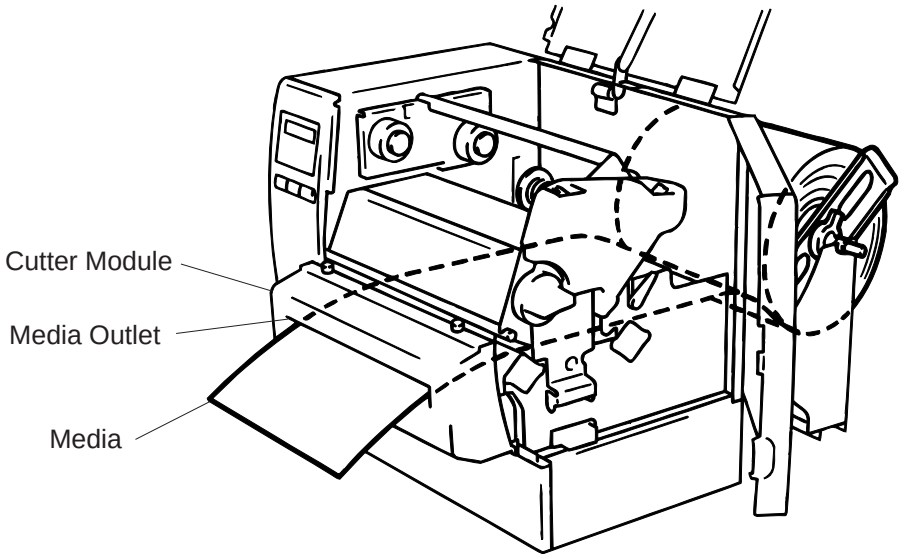


Fig. 8-7

Strip type:

① Strip labels from the backing paper for about 200-mm long from the top edge of the label roll.
② Lower the backing paper release bar.
③ Pass the backing paper between the strip roller and the backing paper holder. After taking up any slack of the media, set the backing paper release bar in position.

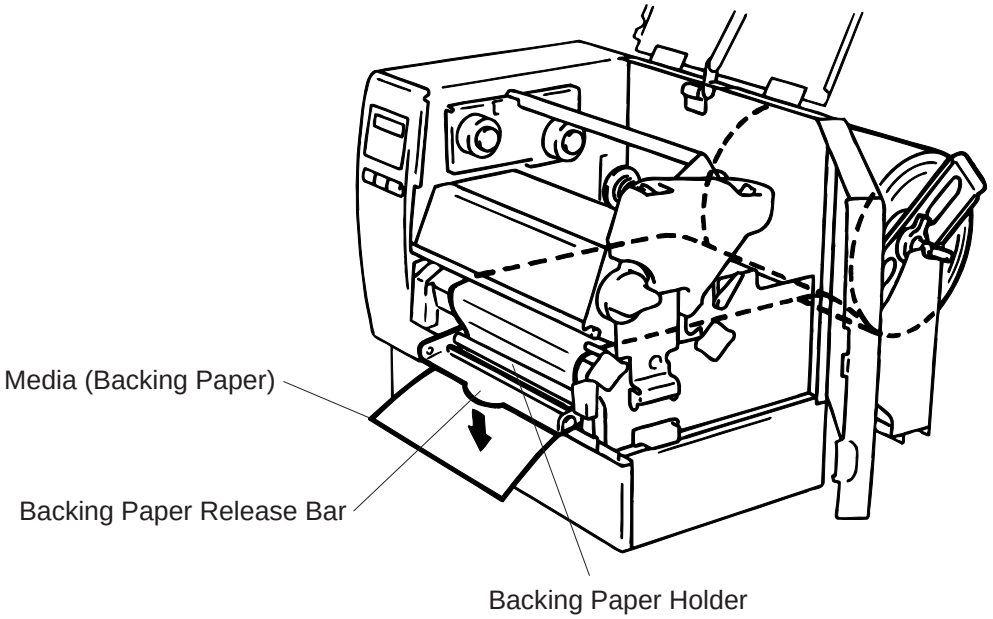


Fig. 8-8

9. Turn the head lever to the proper position depending on the used media. (Refer to Fig. 7-1)
   ①: Labels or thin tag paper
   ②: Thick tag paper

CAUTION: *When using labels ensure that the head lever is set to position ①.*

10. Close the top and right side covers.

9. INSERTING THE OPTIONAL FLASH MEMORY CARD (B-872 only)

WARNING!

Turn the power OFF when inserting or removing the flash memory card.

CAUTION:

To protect memory cards, discharge static electricity from your body by touching the printer rear cover prior to touching the memory cards.

1. Turn the power off.
2. Insert the flash memory card into the memory card slot on the rear of the printer.
3. Turn the power on.

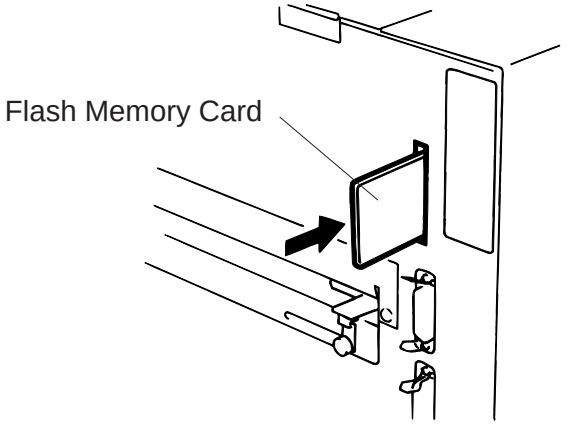


Fig. 9-1

NOTES:
1. *Be sure to protect a flash memory card when not in use in the printer by putting it in it's protective cover.*
2. *Do not subject the card to any shocks or excessive forces.*
3. *Do not expose the card to extremes of heat by either storing in direct sunlight or close to a heater.*
4. *Do not expose the card to excessive humidity by wiping it with a wet cloth or storing it in a damp place.*
5. *Before inserting or removing the card, make sure that the power switch is turned off.*
6. *The following flash cards can be used. (The 1MB-card is read only and the 4MB card can read/write.)*

Capacity	Maker	Type	Device code	Maker code
1M Byte	Maxell	EF-1M-TB AA	D0H	1CH
	Mitsubishi	MF81M1-GBDAT01		
4M Byte	Maxell	EF-4M-TB CC	88H	B0H
	Maxell	EF-4M-TB DC	ADH	04H
	Centennial Technologies INC.	FL04M-15-11119-03		01H
	INTEL	IMC004FLSA	A2H	89H
	Simple TECHNOLOGY	STI-FL/4A		
	Mitsubishi	MF84M1-G7DAT01		
	PC Card KING MAX	FJN-004M6C		
	Centennial Technologies INC.	FL04M-20-11138-67		
	PC Card	FJP-004M6R	A0H	89H
	Mitsubishi	MF84M1-GMCAV01	AAH	

10. INSERTING THE OPTIONAL PCMCIA CARD (B-882 only)

WARNING:
Turn the power OFF when inserting or removing the PCMCIA card.

CAUTION:
To protect PCMCIA cards, discharge static electricity from your body by touching the printer rear cover prior touching the PCMCIA cards.

1. Turn the power off.
2. Insert the PCMCIA card into the card slot at the rear of the printer.
3. Turn the power on.

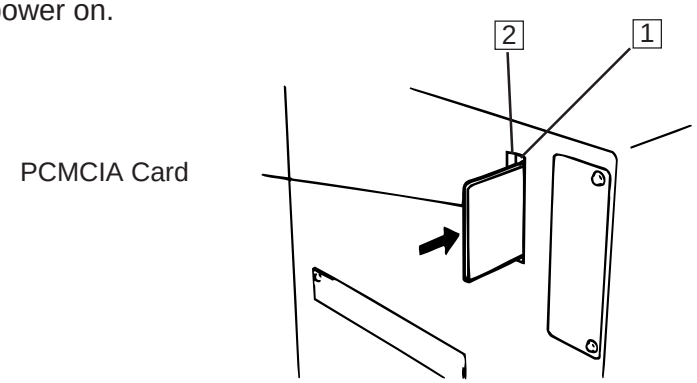


Fig. 10-1

NOTES:
1. *Be sure to protect a PCMCIA card when not in use in the printer by putting it in its protective cover.*
2. *Do not subject the card to any shocks or excessive forces.*
3. *Do not expose the card to extremes of heat by either storing in direct sunlight or close to a heater.*
4. *Do not expose the card to excessive humidity by wiping it with a wet cloth or storing it in a damp place.*
5. *Before inserting or removing the card, make sure that the power switch is turned off.*
6. *The following PCMCIA cards can be used.*

Type	Maker	Description	Remarks
ATA Card	A card conforming to the PC card ATA standard		———
LAN Card	3 COM	Ether Link III 3C589D PC card	Install into the slot (2) only. (This card installed into the slot (1) will not work.)
Flash Memory Card (4 MB)	Maxell	EF-4M-TB CC	———
		EF-4M-TB DC	

7. *Install the LAN card into the slot (2).*

11. CARE/HANDLING OF THE MEDIA AND RIBBON

> ***CAUTION:***
> *Be sure to read carefully and understand the Supply Manual. Use only media and ribbon which meet specified requirements. Use of non-specified media and ribbon may shorten the head life and result in problems with bar code readability or print quality. All media and ribbon should be handled with care to avoid any damage to the media, ribbon or printer. Read the following guideline carefully.*

- Do not store the media and ribbon for longer than the manufactures recommended shelf life.
- Store media rolls on the flat end, do not store them on the curved sides as this might flatten that side causing erratic media advance and poor print quality.
- Store the media in plastic bags and always reseal after opening. Unprotected media can get dirty and the extra abrasion from the dust and dirt particles will shorten the print head life.
- Store the media and ribbon in a cool, dry place. Avoid areas where they would be exposed to direct sunlight, high temperature, high humidity, dust or gas.
- The thermal paper used for direct thermal printing must not have the specifications which exceed Na^+ 800 ppm, K^+ 250 ppm and CL^- 500 ppm.
- Some ink used on pre-printed labels may contain ingredients which shorten the print head's product life. Do not use labels pre-printed with ink which contain hard substances such as carbonic calcium ($CaCO_3$) and kaolin (Al_2O_3, $2SiO_2$, $2H_2O$).

For further information please contact your local distributor or your media and ribbon manufacturer.

12. GENERAL MAINTENANCE

WARNING!
1. Be cafeful when handling the print head as it becomes very hot.
2. Care must be taken not to injure yourself with the printer paper cutter.
3. Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.
4. To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.

12.1 CLEANING

WARNING!
1. Be sure to disconnect the power cord prior to performing any maintenance.
2. Do not use any tool that may damage the print head.
3. DO NOT POUR WATER directly onto the printer.

To help retain the high quality and performance of your printer it should be regularly cleaned. The greater the usage of the printer, the more frequent the cleaning. (i.e. low usage=weekly : high usage=daily).

1. Turn the power off.
2. Open the top cover and right side cover.
3. Turn the head lever to raise the print head.
4. Remove the ribbon and media.
5. Clean the element of print head with print head cleaner.
6. Clean the platen with an alcohol moistened cloth.

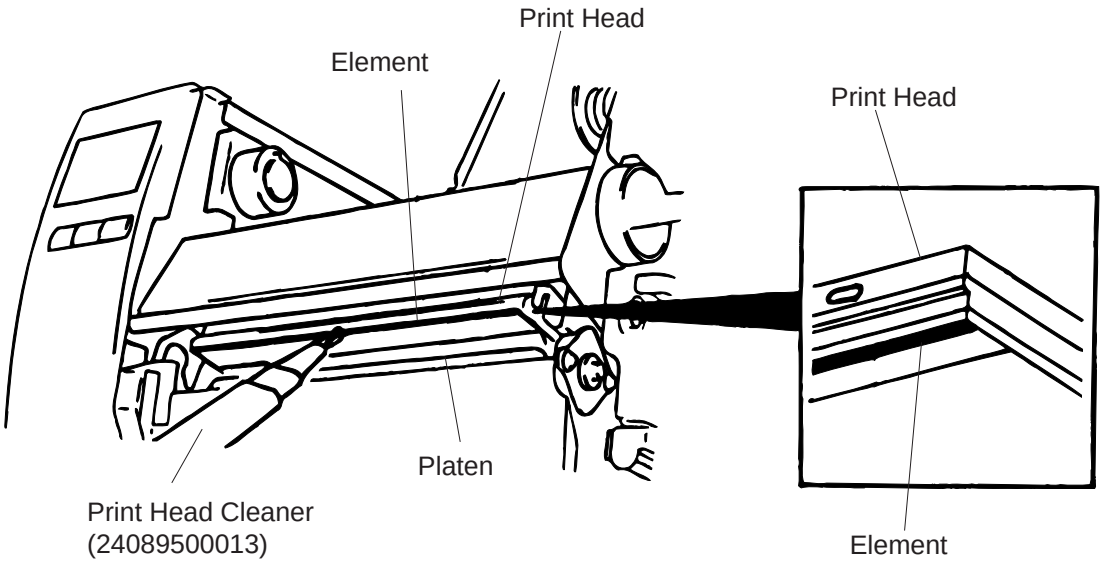


Fig. 12-1

7. Turn the pinch roller lever to the right.
8. Remove the white screw and detach the ribbon end sensor plate.

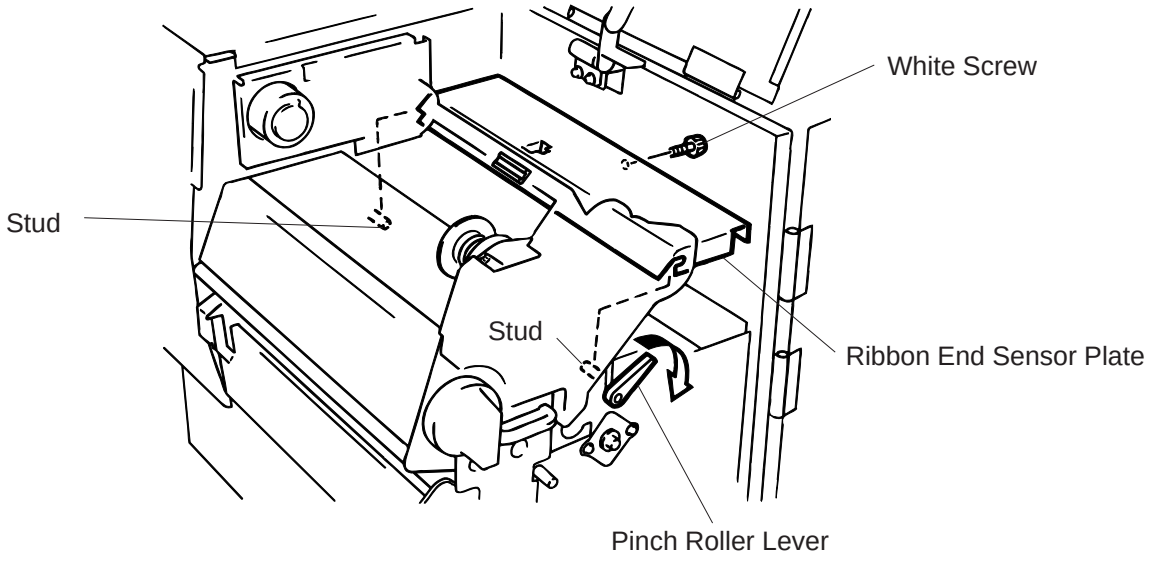


Fig. 12-2

NOTE: *When installing the ribbon end sensor plate, be sure to fit both studs in the notches of the ribbon end sensor plate.*

9. Remove the pinch roller block, then clean the roller belt and feed roller with cloth moistened by alcohol.

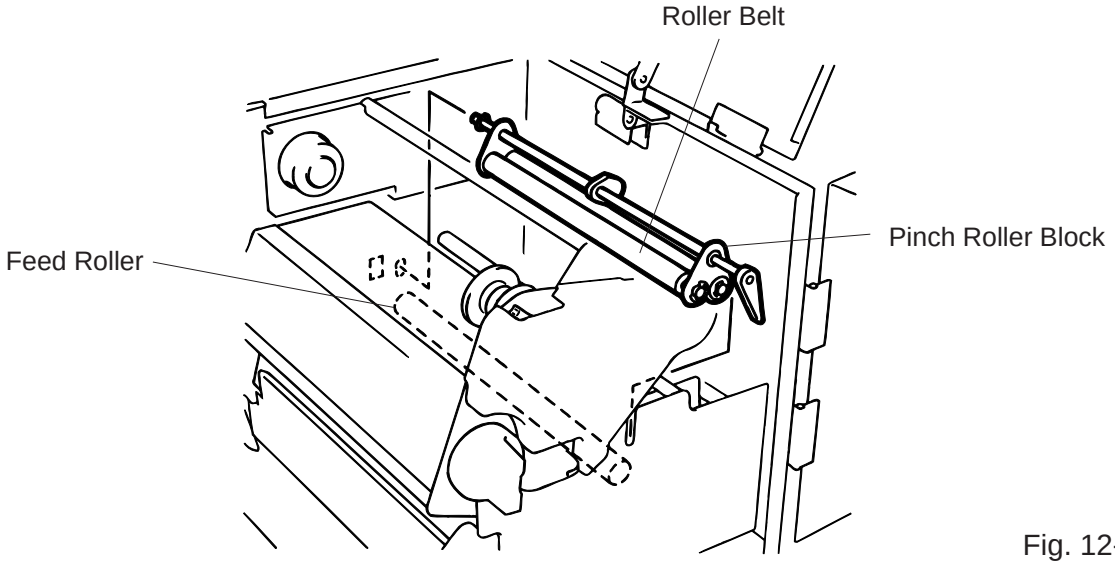


Fig. 12-3

10. Reassemble the pinch roller block in the reverse order of removal.

12.2 UNDER THE MEDIA GUIDES

1. Remove the Media Guides.

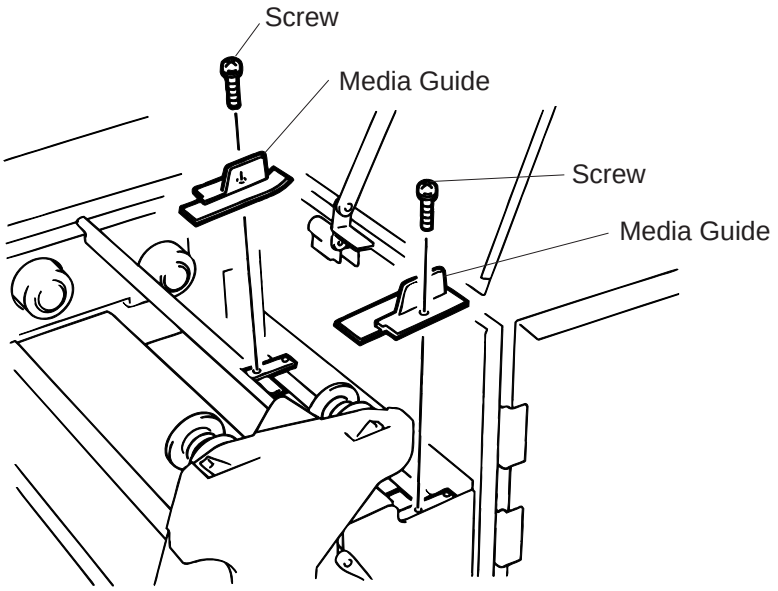


Fig. 12-4

2. Remove the jammed Media.
3. Clean “dust and glue” on the Media Guides with a soft cloth moistened with alcohol.
4. Remount the Media guides using the screws.

NOTE: *Be careful* ***NOT TO LOSE*** *the screw.*

12.3 COVERS AND PANELS

The covers should be cleaned by wiping with a dry cloth or a cloth slightly dampened with a mild detergent solution.

NOTE: *Clean printer cover with an electrostatic free cleaner for automated office equipment.*

WARNING!
1. DO NOT POUR WATER directly onto the printer. *2. DO NOT APPLY cleaner or detergent directly onto any cover or panel.* *3. NEVER USE THINNER OR OTHER VOLATILE SOLVENT on the plastic covers.* *4. DO NOT clean the panel covers or the supply window with alcohol as it may cause them to discolor, loose their shape or develop structural weakness.*

12.4 REMOVING JAMMED MEDIA

1. Turn the power off.
2. Open the top cover, and right side cover.
3. Turn the head lever to position “OPEN, “ then release the head lock plate.
4. Remove the white screw, unclamp and disconnect the connector of the media guide plate, and then detach the media guide plate. (See Fig. 12-5.)
5. Remove the ribbon and media.
6. Remove the jammed media. DO NOT USE any sharp implement or tool as these could damage the printer.
7. Clean the print head and platen, then remove any further dust or foreign substances.
8. Place the portion Ⓑ of the media guide plate on the media sensor. Secure the media guide plate with the white screw.

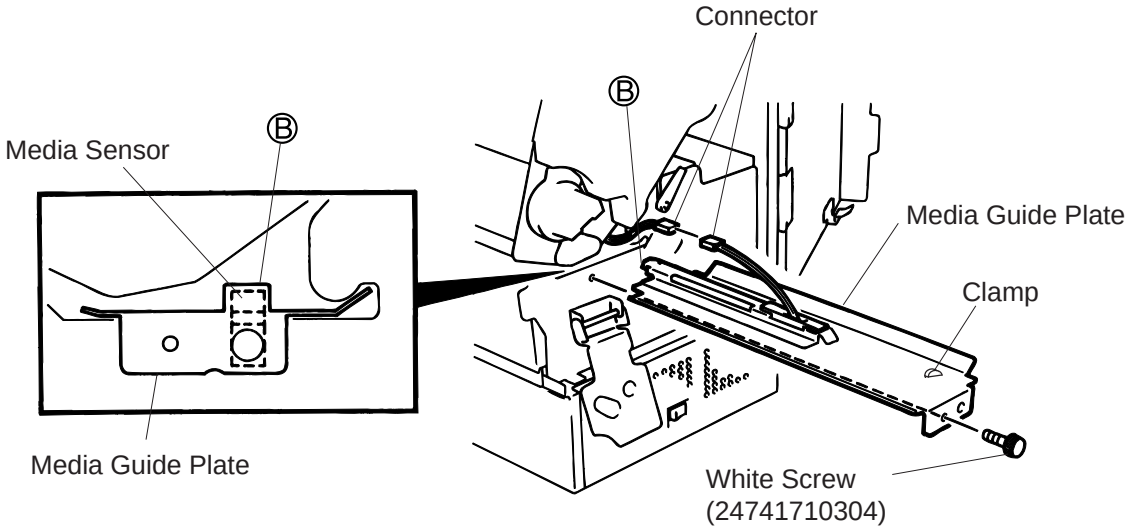


Fig. 12-5

9. Media jams in the cutter unit can be caused by wear or residual glue from label stock on the cutter. Do not use none specified media in the cutter. If you get frequent jams in the cutter contact your Authorized Service representative.

■ Cleaning the Cutter Unit

WARNING!
1. Be sure to turn the power off before cleaning the cutter unit. *2. The cutters are sharp and care should be taken not to injure yourself when cleaning.*

1. Loosen two screws and remove the cutter cover.
2. Remove the white screw and media guide.
3. Remove the jammed paper and trash.
4. Clean the cutter with dry cloth.

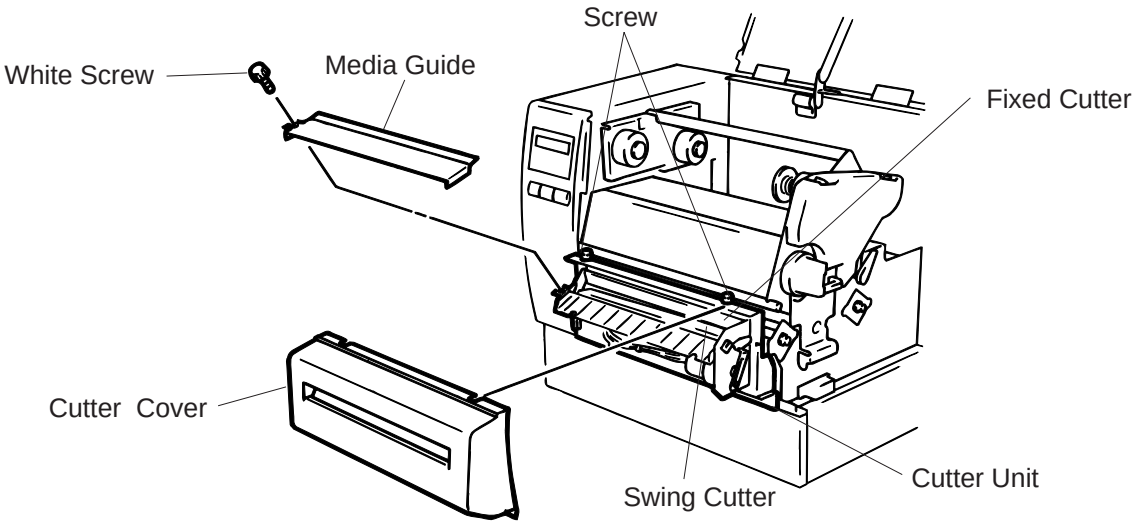


Fig. 12-7

5. Assembling is reverse order of removal.

■ Cleaning the strip unit

WARNING!
Be sure to turn the power off before cleaning the strip unit.

1. Lower the backing paper release bar to remove the jammed media.
2. Clean the strip roller and backing paper holder with ethyl alcohol.

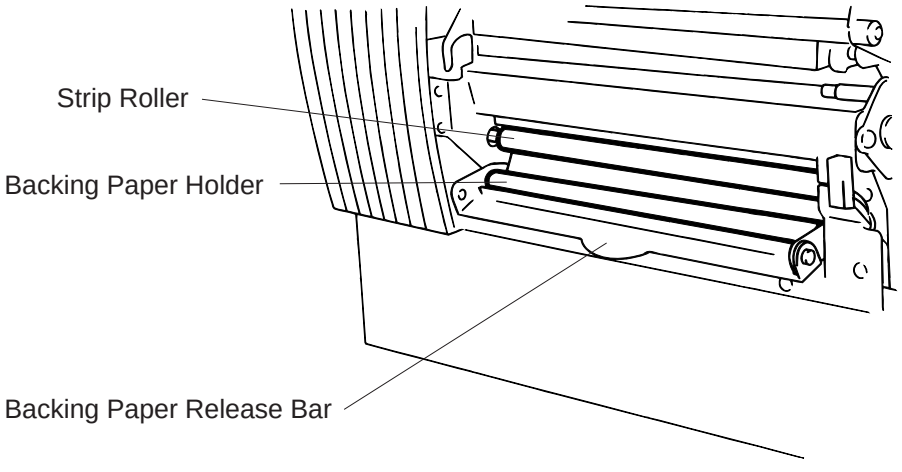
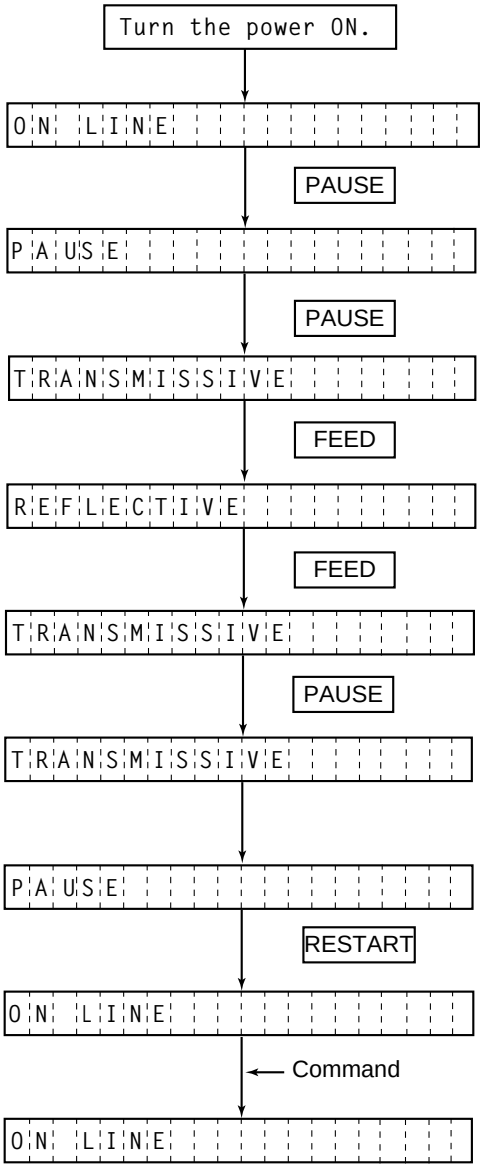


Fig. 12-8

12.5 THRESHOLD SETTING

For the printer to maintain a constant print position it uses the transmissive sensor to detect the gap between labels by measuring the amount of light passing through the media. When the media is pre-printed, the darker (or more dense) inks can interfere with this process causing paper jam errors. To get around this problem a minimum threshold can be set for the sensor in the following way.

■ Threshold setting procedure



(1) The printer is in stand-by.
(2) Load a media roll in the usual way.
(3) Press the **[PAUSE]** key.

(4) The printer enters the pause mode.

(5) Press and hold the **[PAUSE]** key for at least 3 seconds in the pause state.
(6) The sensor type is displayed.

(7) Press the **[FEED]** key.

(8) The reflective sensor (black mark sensor) is selected.

(9) Press the **[FEED]** key again.

(10) The transmissive sensor (feed gap sensor) is selected.
(11) Press and hold the **[PAUSE]** key.
(12) The media is advanced until the **[PAUSE]** key is released.
(13) Release the **[PAUSE]** key when more than 1.5 labels (tags) are advanced.
(Threshold setting is completed by this operation.)

(14) Press the **[RESTART]** key.

(15) The printer is in stand-by.

(16) Send an issue command from the PC to the printer.

NOTES:

1. *If the **[PAUSE]** key is released within 3 seconds whilst in pause state, paper will not feed.*
2. *Failure to feed more than 1.5 to 2 labels may result in an incorrect threshold setting.*
3. *While the print head is raised, the **[PAUSE]** key does not work.*
4. *Error such as paper end and cutter error are not detected during paper feed.*
5. *Selecting the transmissive sensor (for pre-printed labels) within software commands allows the printer to detect the proper print start position correctly even when using pre-printed labels.*
6. *If the printer continues to print out of position after setting the threshold, adjust the feed gap sensor in the system mode. Reset the threshold again. Make sure that the transmissive sensor (for pre-printed labels) is selected in the feed and issue commands.*

13. TROUBLESHOOTING

WARNING!

If you cannot solve a problem with the following solutions, do not attempt to repair it yourself. Turn the power off, unplug the printer, then contact your TOSHIBA TEC representative for assistance.

Error Message	Problem	Solution
PAPER JAM ****	1. The media is not fitted correctly.	1. Re-fit the media correctly. → Press the RESTART key.
	2. The media path is jammed and does not feed smoothly.	2. Remove the cause of the jam and replace the media correctly. → Press the RESTART key.
	3. The installed media type does not match the selected sensor.	3. Turn the power off then on again. Select the correct sensor. → Feed the media.
	4. The black mark position on the media does not match the sensor position.	4. Adjust the sensor position. → Press the RESTART key.
	5. The installed media size is different from the programmed size.	5. Turn the power off then on again. Set the correct media size. → Feed the media.
	6. The feed gap sensor cannot see the difference between the print area and the gap.	6. Set the threshold (see page 12-6). Else Turn the power off and call your Authorized Service representative.
HEAD OPEN ****	Feed or printing has been attempted while the print head is raised or the pinch roller lever is depressed.	Lower the print head or raise the pinch roller lever. → Press the RESTART key.
NO PAPER ****	The media has run out.	Load new media. → Press the RESTART key.
NO RIBBON ****	The ribbon has run out.	Load a new ribbon. → Press the RESTART key.

Error Message	Problem	Solution
EXCESS HEAD TEMP.	The print head is too hot.	Turn the power off and decrease the print head temperature.
HEAD ERROR	This message is displayed when sending the head broken check command ([ESC] HD001 [LF] [NUL]) and the print head has a broken element.	1. Restart the printing by pressing the [RESTART] key. 2. Replace the print head.
RIBBON ERROR ****	There is a fault with the ribbon sensor.	Turn the power off. Contact your Authorized Service representative.
CUTTER ERROR ****	Media is jammed in the cutter.	Remove the jammed media and feed the undamaged media through the cutter. → Press the [RESTART] key. Else Turn the power off and contact your Authorized Service representative.
FLASH WRITE ERROR	An error has occurred when loading data onto a flash memory card or ATA card.	1. Turn the power off, re-seat the flash memory card or ATA card and try again. 2. Replace the flash memory card or ATA card and retry. 3. Turn the power off and contact your Authorized Service representative.
FORMAT ERROR	An error has occurred while formatting a flash memory card or ATA card.	1. Turn the power off, re-seat the flash memory card or ATA card and try again. 2. Replace the flash memory card or ATA card and retry. 3. Turn the power off and contact your Authorized Service representative.
FLASH MEMORY FULL	No more data can be saved in the flash memory card or ATA card.	Replace the card with a new one and re-send data. (In case of flash memory card, only 1MB and 4MB cards can be used. B-882: 4MB only)
COMMUNICATION ERROR	A communication error has occurred with the host.	Turn the power off then on again or press the [RESTART] key. Check the program data. → Call your Authorized Service representative if necessary.

Error Message	Problem	Solution
example) PC001;0A00, ↑ Command error 0300, 2, 2	When an error is detected in a command 20 bytes of the command are displayed. (ESC, LF, NUL are not displayed.)	Correct the command and re-send it again.
Other Error Message	Hardware or software trouble.	Turn the power off then on again. If the problem still exists turn the power off and contact your Authorized Service representative.

NOTE: *If an error is not cleared by pressing the* RESTART *key, the power must be switched off then on again.*
After the power has been switched off and on, all print data in the printer is cleared.
***** denotes a remaining count of unprinted labels.*

Problem	Solution
No print.	1. Check that the media and the ribbon is loaded correctly. 2. Check whether the print head is set correctly or not. 3. Check the cabling between the printer and the host.
Dots missing in the print.	Dirty print head. → Clean the print head. Call your Authorized Service representative if necessary.
Unclear (or blurred) printing.	1. Dirty print head. → Clean the print head. 2. Bad or faulty ribbon. → Replace ribbon. 3. Poor media quality. → Change media type.
Power does not come on.	1. Plug power cord into an AC socket. 2. Check the circuit breakers or fuses. 3. Plug another appliance into the AC socket to check if there is power supplied. Call your Authorized Service representative if necessary.
Printer does not cut.	Check for a paper jam in the cutter. Call your Authorized Service representative if necessary.
You see a raised nap where the media has been cut.	1. Clean the cutter blades. 2. The blades are worn. → Call your Authorized Service representative.

TEC
TOSHIBA TEC CORPORATION

PRINTED IN JAPAN
EO1-33017

TEC Thermal Printer

B-880 SERIES

Product Description

Document No. **EO10-33008**

Original **Apr., 2000**

(Revised)

TOSHIBA TEC CORPORATION

PRINTED IN JAPAN

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CAUTION:

1. *This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
2. *The contents of this manual may be changed without notification.*
3. *Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.*

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1. OUTLINE OF THE SYSTEM

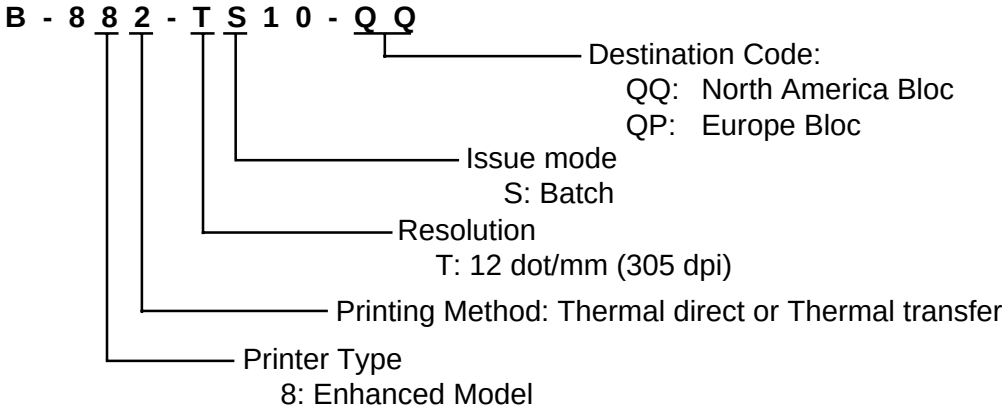
1.1 FEATURES OF THE B-880 SERIES

1) Various bar codes, characters and graphic data can be printed using both thermal transfer and thermal direct methods.
   This printer can also print writable characters and logos at designated coordinates by using a graphic command.
   It not only includes a variety of bar codes, characters and graphic data, but also comes with the new genaration data code symbol and two-dimensional codes (Data Matrix, PDF417, Maxi Code, QR Code and PPOST Code) which are replacing bar codes. It can also print using both thermal transfer and thermal direct methods.
   This printer can also print writable characters and logos at designated coordinates using a graphic command.
2) Since the B-880 accommodates several interfaces such as the RS-232C, Centronics, External I/O and PCMCIA interface board, it is very versatile.
3) A 16-bit CPU and a Gate Arrey equipped with several peripheral LSIs realizes high system performance.
4) With the element positioned at the edge of the print head, print quality is improved because the media passes straight through. No adjustment of media thickness or printing pressure is necessary. A high dot density of 12 dots/mm produces a clear print and the heat history control system optimizes applied pulse signal to the head.
5) This printer accommodates a max. format size of 222.0 mm wide, by 1366.0 mm long and a max. print speed of 203.2 mm/sec.
6) High throughput can be obtained with "on-the-fly" formatting.
7) Since the media is loaded from outside of the printer, the body is smaller, lighter, easier to carry, need less space and costs less to operate.
8) The metal cover and damper provide a heavy-duty enclosure.
   The B-880 has also adopted the automatic switching universal power supply which automatically adjusts to the voltage of the operating environment.
9) A high-speed ribbon saving function which economizes ribbon usage is available.
10) Optional devices such as a cutter module, Strip module and PCMCIA interface board are available.

***NOTE**: Every size is written in millimeter (mm) in this manual. To obtain the size in inch, divide by 25.4*

Data Matrix is a trade mark of International Data Matix, Inc.
PDF417 is a trade mark of Symbol technologies, Inc.
QR Code is a trade mark of DENSO CORPORATION
Maxi Code is a trade mark of united Parcel Service of America, Inc.

1.2 DESCRIPTION OF MODEL NUMBER


B - 8 8 2 - T S 1 0 - Q Q
Destination Code:
QQ: North America Bloc
QP: Europe Bloc
Issue mode
S: Batch
Resolution
T: 12 dot/mm (305 dpi)
Printing Method: Thermal direct or Thermal transfer
Printer Type
8: Enhanced Model

1.3 OVERVIEW AND DIMENSIONS (APPROXIMATE)

1.3.1 Front View/Rear View

Front View

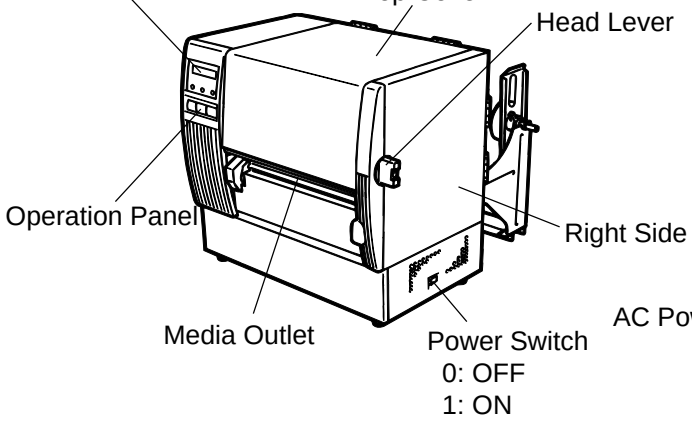


Fig. 1-1

Rear View

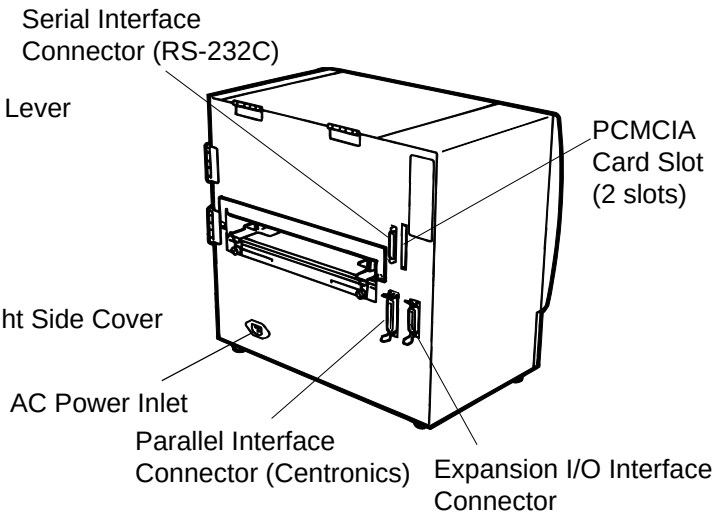
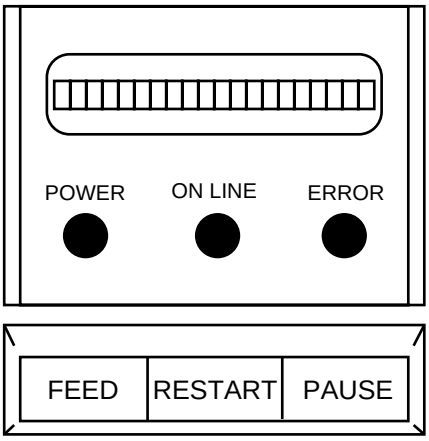


Fig. 1-2

1.3.2 Operation Panel



MESSAGE DISPLAY (LCD)

When power is turned on and it is ready to print, "ON LINE" is displayed.Also displays messages in each mode of the Diag. Test Opration.

POWER LED (Green)

Lights when the power is turned on.

ON-LINE LED (Green)

1) Flashes when communicating with a host computer.
2) On while printing.

ERROR LED (Red)

Lights when the printer does not operate correctly.

FEED Button

Feeds paper. Used to select options in the Diag. Test Operation mode and used to fine adjust values in the nagative direction.(Refer to the Maintenance Manual.)

RESTART Button

Resets the printer when paused or when an error occurs.
Used to set the threshold. (Refer to Owner's Manual)
Used to select option in the Diag. Test Operation mode and used to fine adjust values in the positive derection. (Refer to the Maintenance Manual.)

PAUSE Button

Pauses printing.
Message display shows "PAUSE" and an unprinted count.
Used to set the thereshold. (Refer to Owner's Manual)
Used as an enter key in the Diag. Test Operation mode.

1.3.3 Dimension (Approximate)

Standard : 437 mm (W) x 282 mm (D) x 395mm (H)
With cutter module : 437 mm (W) x 335 mm (D) x 395 mm (H)

1.4 BASIC SPECIFICATIONS

1) Printing method ..... Thermal direct printing or thermal transfer printing

2) Print head (8.4 inches)
   ① Total number of dots .. 2560 dots ③ Effctive print width ..... 213.3 mm
   ② Dot density ..... 12 dots/mm ④ Thermal pitch ..... 0.083 mm

3) Print speed ..... 76.2 mm/sec., 101.6 mm/sec., 203.2 mm/sec. (selectable)
   ***NOTES**: 1. These print speeds are available when printing ratio is less than 20% of the entire label or tag paper.*
   2. The print speed of 203.2 mm/sec. is available only when the ribbon width and media width are 160 mm max.

4) Format size (W) x (L) ..... Label: 222.0 x 1366.0 max.
   Tag Paper: 213.3 x 1364.0 max.

5) Issuing mode ..... Batch printing (standard)
   Auto cut (Auto cut mode is only available when an optional cutter is attached.)
   Strip printing (Strip Module is only available when an optional strip module is attached.)

6) Type of bar code/two dimensional code
   ① UPC-A, UPC-A + 2digits, UPS-A + 5digits
   ② UPC-E, UPC-E + 2digits, UPC-E +5digits
   ③ EAN8, EAN8 + 2digits, EAN8 + 5digits,EAN13, EAN13 + 2digits, EAN13 + 5digits, EAN128
   ④ JAN8, JAN13
   ⑤ NW-7
   ⑥ CODE39 (standard/full ASCII)
   ⑦ CODE93, CODE128 (auto code switch with/without)
   ⑧ ITF
   ⑨ MSI
   ⑩ Industrial 2 of 5
   ⑪ Data Matrix
   ⑫ PDF417
   ⑬ Maxi Code
   ⑭ QR Code
   ⑮ Customer Bar Code
   ⑯ POSTNET
   ⑰ RM4SCC (Royal Mail 4 State Customer Code)
   ⑱ KIX CODE
   ⑲ Micro PDF417

7) Bar code rotation ..... 0 , 90 , 180 , 270

8) Magnification of bar code

■ UPC/EAN/JAN/CODE93/128/PDF417 ..... Up to 6 modules can be automatically calculated using 1-module width designation (1 to 15 dots).

Bar code \ Dots/Module		2	3	4	5	6	7	8
UPC-A/E EAN8/13 JAN8/13	Min. Module Width (mm)	-	0.25	0.33	0.42	0.50	0.58	0.66
	Magnification (times)	-	0.76	1	1.27	1.52	1.76	2
CODE93 EAN128 CODE128 PDF417	Min.Module Width (mm)	0.166	0.25	0.33	0.42	0.50	0.58	0.66

Bar code \ Dots/Module		9	10	11	12	13	14	15
UPC-A/E EAN8/13 JAN8/13	Min. Module Width (mm)	-	-	-	-	-	-	-
	Magnification (times)	-	-	-	-	-	-	-
CODE93 EAN128 CODE128 PDF417	Min.Module Width (mm)	0.747	0.83	0.91	1.00	1.08	1.16	1.25

■ NW-7/CODE39/ITF/MSI/Industrial 2 of 5 ..... The width of narrow bars, wide bars and spaces can be optionally changed in a range of 1 to 99 dots.

■ Data Matrix ..... The width of one cell can be changed in a range of 1 to 99 dots.

9) Type of characters

① Times Roman medium (12, 15 point)
② Times Roman bold (15, 18, 21 point)
③ Times Roman Italic (18 point)
④ Helvetica medium (9, 15, 18 point)
⑤ Helvetica bold (18, 21 point)
⑥ Helvetica Italic (18 point)
⑦ Presentation bold (27 point)
⑧ Letter Gothic medium (14.3 point)
⑨ Prestige Elite medium (10.5 point)
⑩ Prestige Elite bold (15 point)
⑪ Courier medium (15 point)
⑫ Courier bold (18 point)
⑬ OCR-A,B (12 point)
⑭ Outline font (4 types)
⑮ Writable characters
(40 types, 2-byte character is available)
⑯ Price font (3 types)
⑰ Optional True Type fonts (40 types)

10) Character code

① PC-850 ② PC-8 ③ PC-852 ④ PC-857 ⑤ PC-851 ⑥ PC-855
⑦ PC-1250 ⑧ PC-1251 ⑨ PC-1252 ⑩ PC-1253 ⑪ PC-1254 ⑫ PC-1257
⑬ LATIN9 ⑭ Arabic

11) Character magnification

① Regular font: 0.5 ~ 9.5 times (magnified by 0.5 times in each direction)
② Outline font: 2.0 ~ 85.0 mm (magnified 0.1 mm in each direction)

***NOTE**: When the outline font size is large, the ribbon may wrinkle according to the quality of the ribbon or print tone.*

12) White or black background All types of characters are available

13) Character rotation ..... 0 , 90 , 180 , 270

14) Character strings rotasion ..... 0 , 90 , 180 , 270

15) Type of line

① Horizontal line ② Vertical line ③ Slant line ④ Square ⑤ Rounded Rectangle
⑥ Circle

16) Line Width ..... 1 dot to 12 dots can be specified (in units of 0.1 mm)
Guaranteed only when a line has more than 3 dots.

17) Mechanism

① Batch mechanism
This is the standard mechanism which let the printer print continuously without winding the label and tag paper. The strip or auto-cut function is available when the optional module is installed.

② Auto cut mechanism
When the cutter module is installed, the backing paper and tag paper are cut individually (stop and cut). Minimum cut length is 25.4 mm (tag paper) or 38 mm (label).

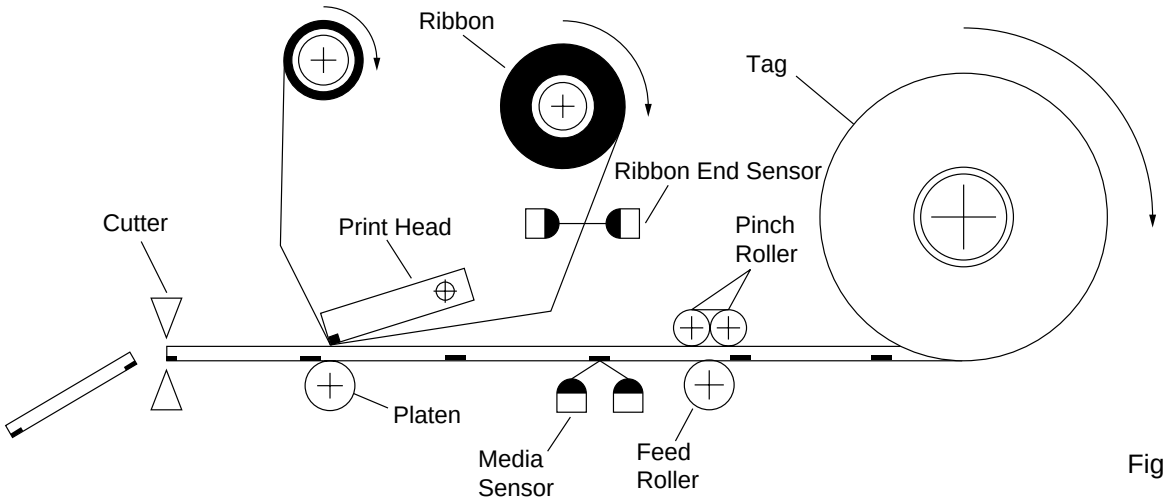


Fig. 1.4

③ Ribbon Saving Mechanism
Two solenoids installed in both sides of the print head automatically lift the print head during paper feed to minimize ribbon loss.

18) Power supply (Universal power supply : Automatic switching)
QQ model: AC85 ~ 138 V, 45 ~ 66 Hz
QP model: AC187 ~ 276 V, 45 ~ 66 Hz

***NOTE**: You do not need to chang the voltage, however, make certain that the power supply cord being used is rated for the voltage supplied.*

19) Current consumption
Printing: 260 W max., QQ model: 3.5 A max., QP model : 1.4 A max.
(Stand by : QQ model: 20W/360 mA, QP model : 26W/270 mA)

20) Rush current ..... QQ model : 6.5 A or less, QP model : 11 A or less

1.5 ELECTRONICS SPECIFICATIONS

1) CPU HD6417708SF60
2) Memory
   ① Program: 4MB Flash ROM
   ② Backup: EE-PROM 128 Bytes
   ③ Image buffer + Work: 16 MB EDO DRAM
3) Interface
   ① RS-232C interface
      (1) Communication mode: Full-duplex
      (2) Transmission speed: 2400,4800,9600,19200, 38400 BPS (selectable)
      (3) Synchronization: start-stop synchronization
      (4) Transmission parameter
         ■ Parity: None, EVEN, ODD
         ■ Start bit: 1-bit
         ■ Stop bit: 1-bit or 2-bit
         ■ Word length 7-bit or 8-bit
      (5) Error detection
         ■ Parity check: VRC (Vartical parity check)
         ■ Framing error: This error occurs when no stop bit is found in the frame specified startig with the start bit.
         ■ Overrun error: This error occurs when subsequent data is input before the data input to the UART from the host is read by the printer.
      (6) Data entry code: ASCII, 8-bit code for European characters, 8-bit code for graphic
      (7) Receiving buffer: 10KB
      (8) Protcol
         ■ XON/XOFF (DC1/DC3) protocol
            • When initialized after power on, this printer becomes ready to receive data and sends an XON code (11H). (Trasmission or non-transmission of XON code is selectable by means of the DIP switch.)
            • The printer sends an XOFF code (13H) when the blank positions in the receive buffer becomes 800 Bytes or less.
            • The printer sends an XON code (11H) when the blank positions in the receive buffer are 2KB or more.
            • When there are no blank positions in the receive buffer, the printer discards data received which exceeds the receive buffer capacity, without storing it in the buffer. (After detecting the XOFF code, the host computer must stop transmission before the printer receive buffer becomes full.)
            • The ptinter sends an XOFF code (13H) at power off time.

■ READY/BUSY (DTR) protocol

- When initialized after power on, this printer becomes ready to receive data and converts the DTR signal to "High" level (READY).
- The printer converts the DTR signal to "LOW" level (BUSY) when the blank positions in the receive buffer amount to 800 Bytes or less.
- The printer converts the DTR signal to "High" level (READY) when the blank position in the receive buffer amount to 2KB or more.
- When there are no blank position in the receive buffer, the printer discards data received which exceeds the receive buffer capacity, without storing it in the buffer.

  (After detecting a BUSY signal, the host computer must stop transmission before the printer receive buffer becomes full.)

■ XON/XOFF (DC1/DC3) protocol + READY/BUSY (DTR) protocol

- When initialized after power on, this printer becomes ready to receive data and converts the DTR signal to "High" level (READY). The printer sends an XON code (11H).
- When the blank positions in the receive buffer are 800 Bytes or less, the printer converts the DTR signal to "LOW" level (BUSY) and sends an XOFF code (13H).
- When the bland positions in the receive buffer are 2KB or more, the printer converts the DTR signal to "High" level (READY) and sends an XON code (11H).
- When there are no blank positions in the receive buffer, the printer discards data received which exceeds the receive buffer capacity, without storing it in the buffer.

  (After detecting the XOFF code or BUSY signal, the host computer must stop transmission before the printer receive buffer becomes full.)
- The printer sends an XOFF code (13H) at power off time.

■ READY/BUSY (RTS) Protocol

- When initialized after power on, this printer becomes ready to receive data and converts the RTS signal to "High" level (READY).
- The printer converts the RTS signal to “Low” level (BUSY) when the blank positions in the receive buffer amount to 800 Bytes or less.
- The printer converts the RTS signal to “High” level (READY) when the blank positions in the receive buffer amount to 2 KB or more.
- When there are no blank position in the receive buffer, the printer discards data received which exceed the receive buffer capacity, without storing it in the buffer. (After detecting a BUSY signal, the host computer must stop transmission before the printer receive buffer becomes full.)
- Both the DTR signal output from the printer and the DSR signal output from the PC are always “High”.

NOTES: *1. When performing the flow control with Windows, in the port setting screen, select “Hardware” for flow control. [set to the READY/BUSY (RTS) protocol]*

2. Under the READY/BUSY (DTR) protocol, after turning the printer power ON, send data 200ms after the DTR signal is converted to “High” level (READY). And under the READY/BUSY (RTS) protocol, after turning the printer power ON, send data 200ms after the RTS signal is converted to “High” level (READY).

(9) Pin description

Pin No.	Signal	I/O	Description
1	FG (Framed Ground)	-	Ground line for circuit protection.
2	RD (Received Data)	I	Data line from which the printer receives data from the host (receive data line). Logic "1" is "Low" , and "0" "High". It is LOW (MARK) while no data is being sent.
3	TD (Transmit Data)	O	Data line from which the printer sends data to the host (send data line). Logic "1" is "Low", and "0" "High". It is LOW (MARK) while no data is being sent.
4	CTS (Clear to Send)	I	Input signal from the host. It must be "High" for the printer to send data.
5	RTS (Request to Send)	O	Output signal to the host. (1) READY/BUSY (DTR) protocol It indicates there is data to send to the host. After power is ON, it is always "Hight. (2) READY/BUSY (DTR) protocol Indicates whether the printer is ready to receive data. The signal is at the Low level when the data amount in the data buffer is near full, and at the high level when near empty.
6	DTR (Data Terminal Ready)	O	Output signal to the host. (1) READY/BUSY (RTS) protocol It indicates there is data to send to the host. After power is ON, it is always "High". (2) READY/BUSY (DTR) protocol Indicates whether the printer is ready to receive data mount in the data buffer is near full, and at the high level when near empty.
7	SG (Signal Ground)	-	Ground line for all data and control signals.
20	DSR (Data Set Ready)	I	Input siganl from the host. It must be "High" for the printer to receive data.

(10) Interface circuit

■ Input circuit ■ Output circuit

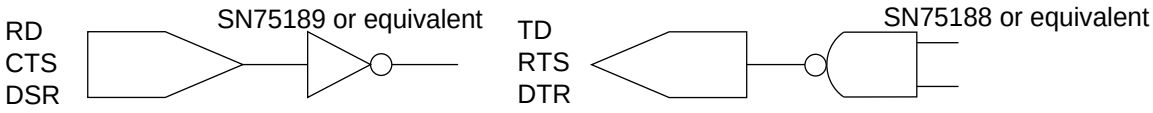


Fig. 1.5

■ Signal level

Input voltage : "H" .. +3V~ + 15V Output voltage : "H" .. +6V ~ +13V
"L"... –3V~ – 15V Output voltage : "L"... –6V ~ –13V

② Centronics interface

(1) Data input method: 8-bit parallel (DATA 1~8)

(2) Control signals: ACK, BUSY, PAUSE, DATA; STB, INPUT; PRIME, FAULT, PE

(3) Data input code: ASCII, JIS 8-bit code for European characters, 8-bit code for graphic

(4) Receiving buffer: 5KB

(5) Input/Output circuit configuration and Input/Output conditions

Type	Signal Name.	Configuration
Input	DATA 1 ~ 8	+5V, 1K, SN74LS14 or equivalent
	$\overline{\text{INPUT}}$ PRIME DATA $\overline{\text{STB}}$	+5V, 1K, 100P, SN74LS14 or equivalent
Output	BUSY FAULT PAUSE ACK PE	SN7406 or equivalent, +5V, 1K, 100P

Logical level (input)
"1" = 2~5V
"0" = 0~0.4V

Logical level (input)
"1" = 2.4~5V
"0" = 0~0.4V

Fig. 1-6

③ Expansion I/O interface

(1) Interface circuit

■ Input circuit

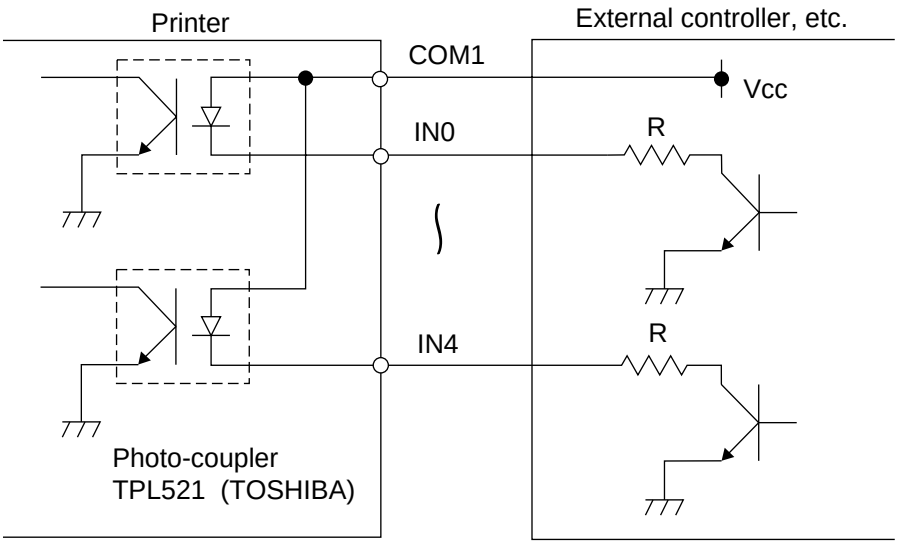


Fig. 1-7

There are five input circuits, and each input is a current loop using a photo-coupler.
The anode of the photo-coupler is connected to common pin COM1 in each of the five circuits. Each cathode is independent. The voltage of Vcc is 24 V (max.) while the diode operating current is 16 mA.

■ Output circuit

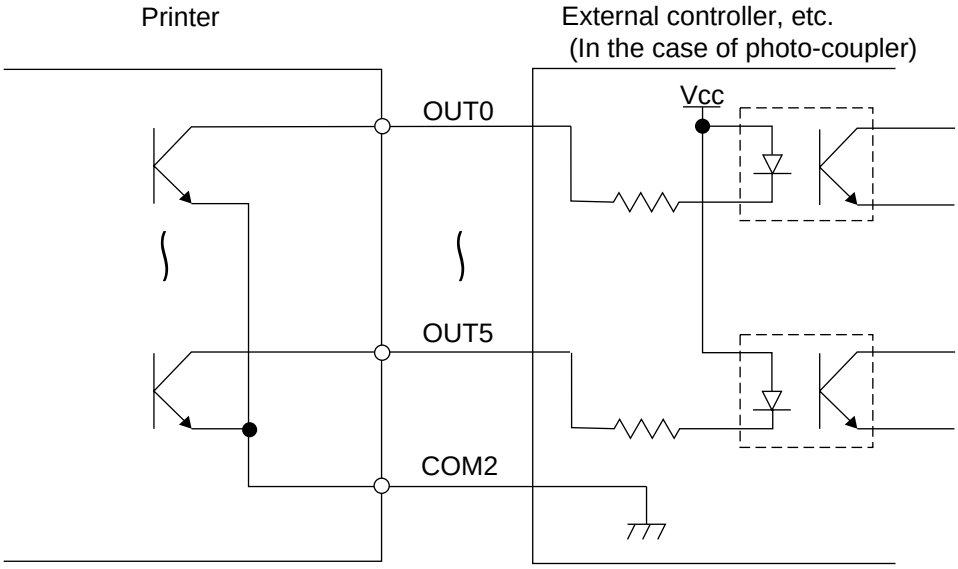


Fig. 1-8

There are six output circuits, and each output is an open collector. The voltage of Vcc is 24V (max.) while the operating current is 150 mA.
For other details, please refer to the Expansion I/O specification.

4) Sensor/Switch

① Head up switch/Pinch Roller Switch (micro switch)
The head up switch, attached at the left of the print head as viewed from the media outlet, detects that the print head is ready to print (head is down). When the head lever is lowered, the head down cam pushes up the print head, the micro switch is turned on and the print head prepares to print.
The pinch roller switch, interlocking with the head up switch, detects the vertical movements of the pinch roller. This micro switch is positioned at 90.6 mm to the right of the main frame. When this switch is turned on (When the pinch roller is down), the pinch roller feeds the media and the print head prints.

② Media sensor 1 (Movable type)
This sensor is comprised of the black mark sensor and feed gap sensor. It is positioned 72.1 mm from the platen. The sensor position is adjustable according to the media width. It moves toward the main frame a max. of 70 mm by turning the knob counterclockwise.

■ Black Mark Sensor 1 (Reflective sensor)
This sensor detects the difference of potential between the black mark and tag paper to find the print position of the tag paper. It is located at the home position with the tag paper or print head before shipment.

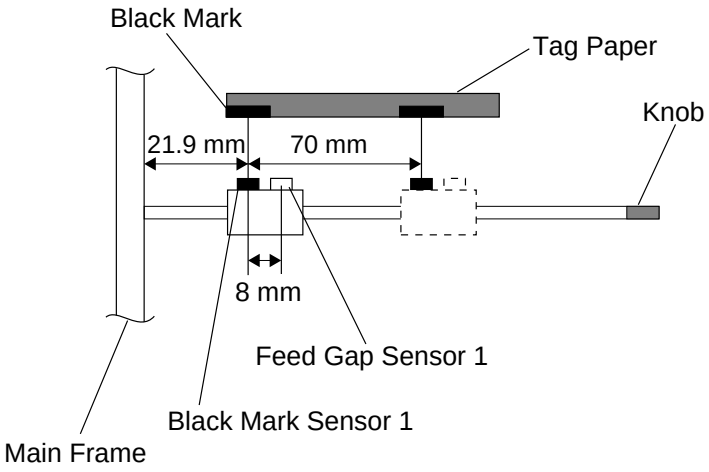


Fig. 1-9

■ Feed Gap Sensor 1 (Transmissive sensor)
This sensor detects the difference in potencial between the backing paper and the label to find the print position of the label. The feed gap sensor is located 8 mm to the right of the black mark sensor.

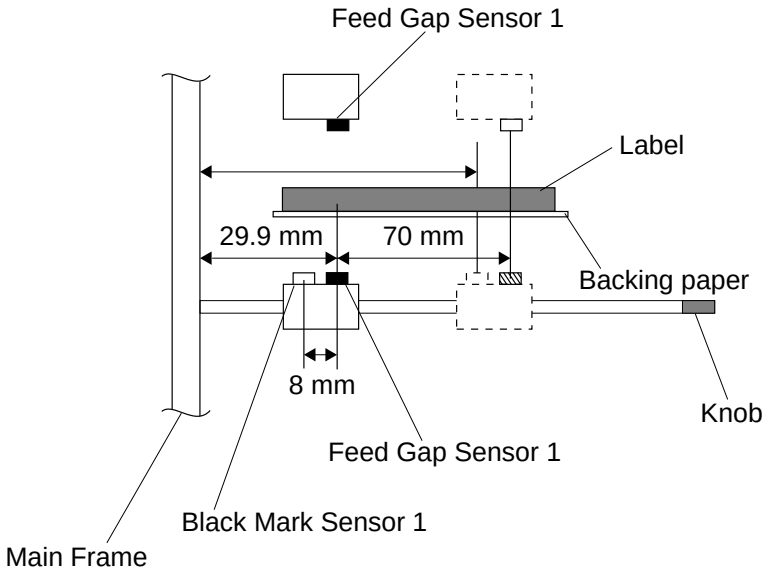


Fig. 1-10

③ Media Sensor 2 (Fixed type)
Like media sensor 1, this sensor is comprised of the black mark sensor and the feed gap sensor. If the detection point is positioned at the center of the media, there is no need to adjust the sensor position.

- Black Mark Sensor 2 (Reflective sensor)
  This is a fixed sensor which detects black marks at the center of the tag paper.
- Feed Gap Sensor 2 (Transmissive sensor)
  This is a fixed sensor which detects label gaps at the center of the label.

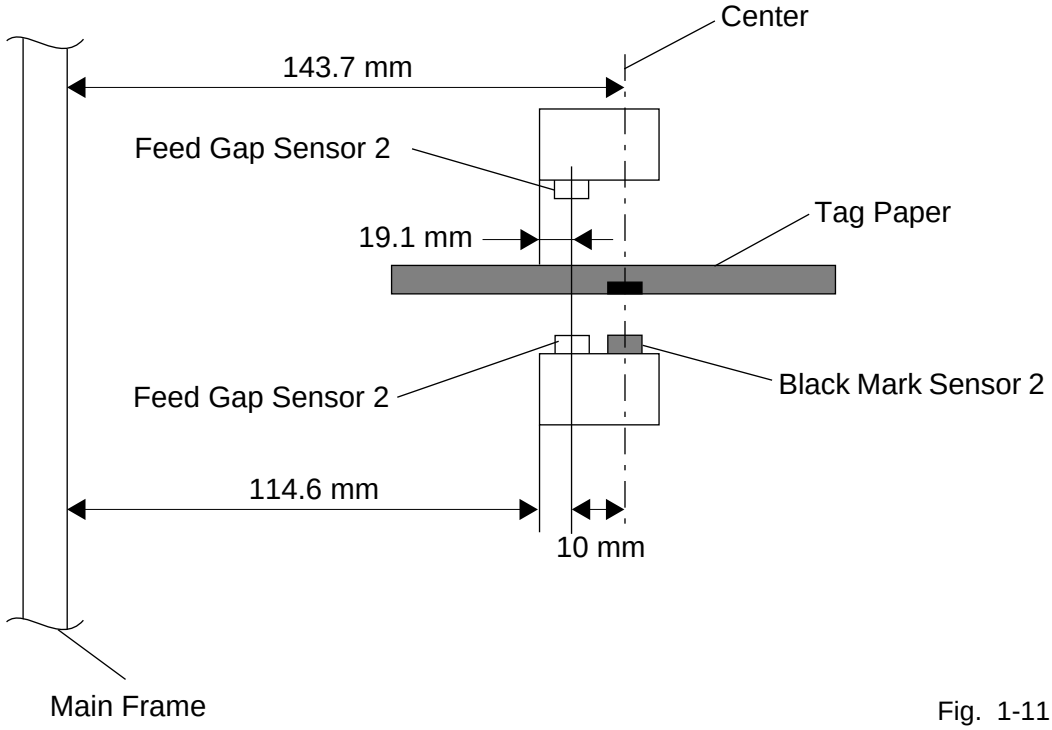


Fig. 1-11

④ Ribbon end sensor (Transmissive sensor)
When printing in thermal transfer mode, this sensor detects the difference in potential between the ribbon and the ribbon end to indicate the ribbon end. It is positioned 103.2 mm from the platen and the detection point is 125.2 mm from the main frame.

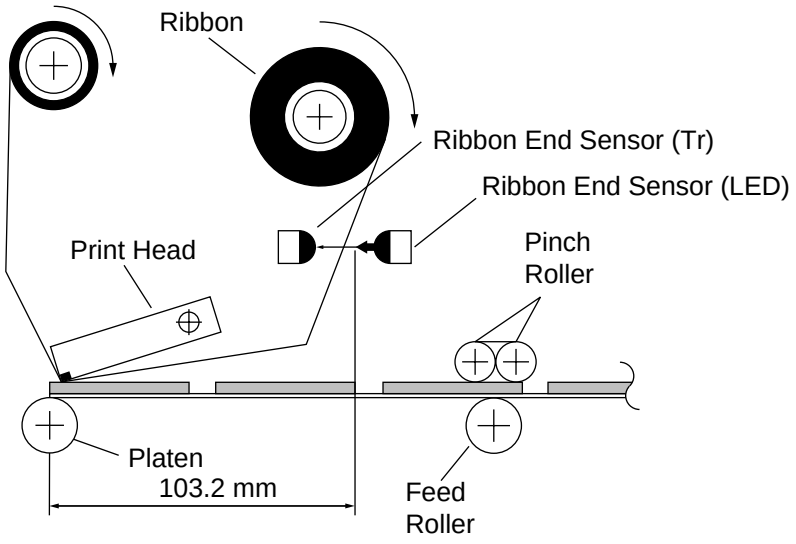


Fig.1-12

⑤ Slit sensor (Transmissive sensor)
This sensor detects the rotation count of the ribbon shaft and the ribbon motors. The ribbon motors torque works to take up slack in the ribbon and is dependent on the detected count. The slit sensor is a photo coupler combining an LED and a transistor.

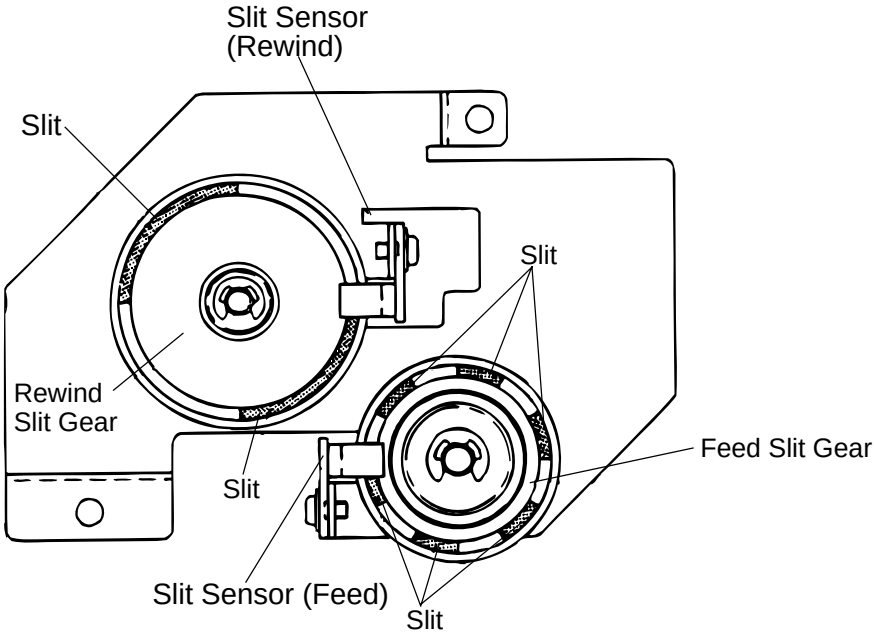


Fig. 1-13

⑥ Cutter home position switch (micro switch)
A cam positioned at the end of the cutter motor arm turns the micro switch on/off in accordance with the cycle of the cutter motion (one rotation). The micro switch status indicates if the cutter is in the home position.
For details, please refer to the Maintenance Manual section 4.1 Cutter Drive.

2.SUPPLY SPECIFICATIONS

Infomation regarding the supply specifications contained in Product Description is essential to service engineers. Detail specifications and other information on the media and ribbon are described in Supply Manual by model. It is issued by and sent from TOSHIBA TEC H.Q (Sales Division) upon release of new model or manual's revision. When purchasing the supplies locally, be sure to refer to the Supply Manual for details, or trouble may occur. Be sure to read carefully and understand the Supply Manual since if also includes the details about notes, precision of the print start position, limitations on printing, etc.

2.1 MEDIA

Type / Item	Thermal Label			Tag Paper	
	Batch	On-demand	Auto-cut	Batch	Auto-cut
Width (mm)	101.6 ~ 225.0			101.6 ~ 225.0	
Length (mm)	10.0 ~ 1368.0	25.4 ~ 1368.0	38.0 ~ 1368.0	10.0 ~ 1368.0	25.4 ~ 1368.0
Thickness (mm)	0.13 ~ 0.17			0.10 ~ 0.17	
Outer roll diameter (mm)	200.0 max.			200.0 max.	
Recommended paper	RICOH: 140LA / OSAKA SEALING: C6TB			I-BEST S / I-BEST W	

***NOTES**:*

1. *When cutting the thermal label, secure a gap of 6 mm or more and cut in the middle of the gap.*
2. *The thermal paper used for direct thermal printing must not have the specifications which exceed Na^+ 800 ppm, K^+ 250 ppm and Cl^- 500 ppm.*
3. *Some ink used on pre-printed labels may contain ingredients which shorten the print head's product life. Do not use labels pre-printed with ink which contain hard sub–stances such as carbonic calcium ($Ca\ CO_3$) and kaolin (Al_2O_3, $2SiO_2$, $2H_2O$).*
4. *The label should be at least three times as long as the detection gap.*
5. *Relations between media roll length and core diameter.*

$$L = \frac{(D^2-d^2)\ x}{4t}$$

L: Media length d: Media core outside diameter
D: Max. roll diameter t: Media thickness

6. *Use of media with a width less than the minimun media width may shorten the print head life.*

1) Thermal Label

<Design>

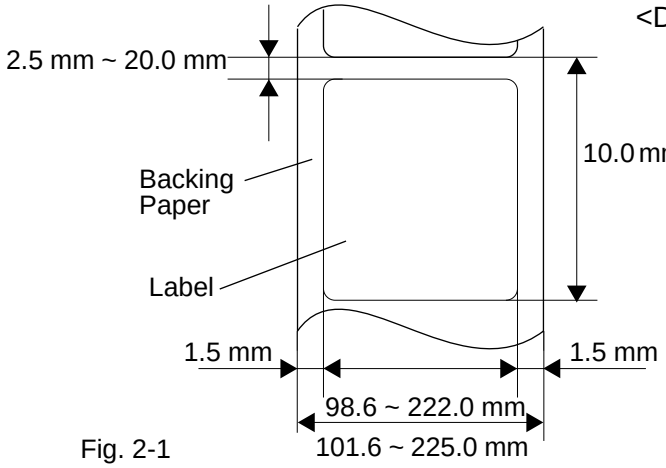


Fig. 2-1

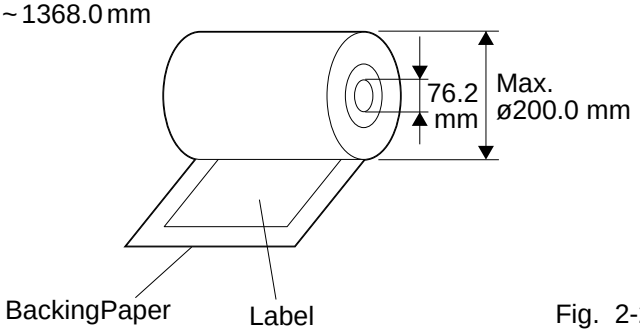


Fig. 2-2

2) Tag Paper

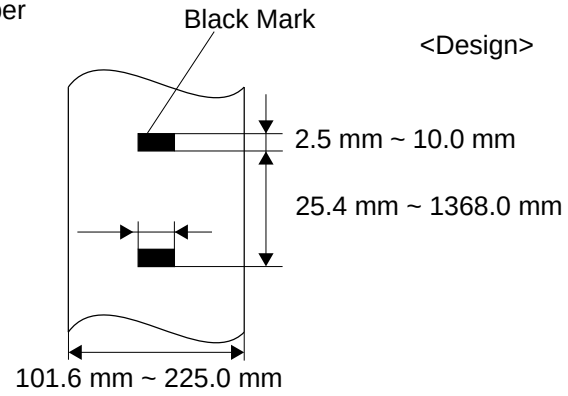


Fig. 2-3

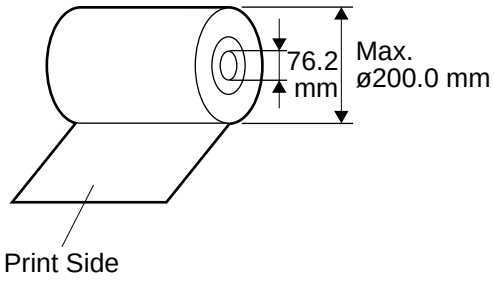


Fig. 2-4

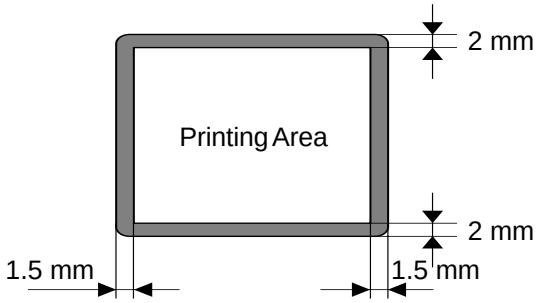


Fig. 2-5

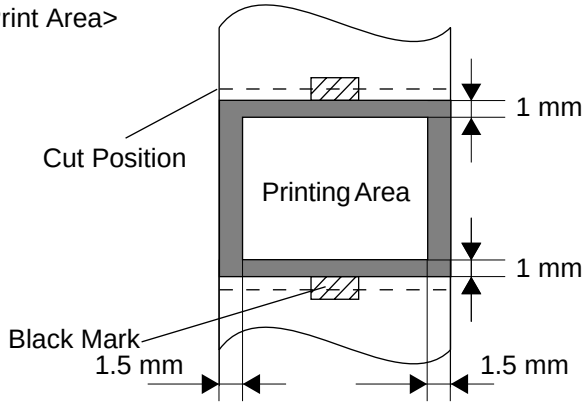
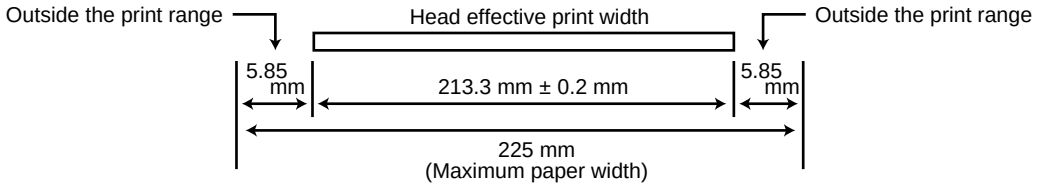


Fig. 2-6

***NOTE**: Max effective print prea is 213.3 mm (W) x 1364.0 mm (L).*

3) Relationship between the head effective print width and paper.



2.2 RIBBON

No.	Item		Specification
1	Shape		Spool type
2	Width		115 ~ 224 mm
3	Max. length		300 m
4	Max. OD		ø 72 mm
5	Back treatment		Coated
6	Core	Material	Cardboard
		Shape	See Fig. 2-7.
7	Leader tape		Polyester film (Opaque), 300 – 5 mm long
8	End tape		Polyester film (Opaque),250 – 5 mm long
9	Winding method		The ink side is outside of ribbon winding.

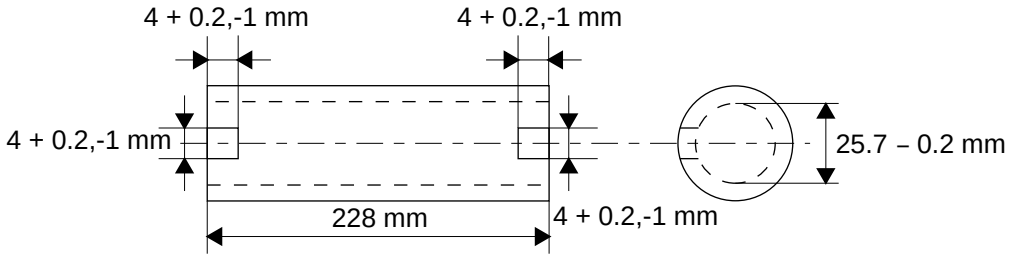


Fig. 2-7

***NOTE**: When purchasing ribbon locally, they must meet the above size. There may be TEC-approved ribbons which do not fall within the above size, however, they have no functional problem.*

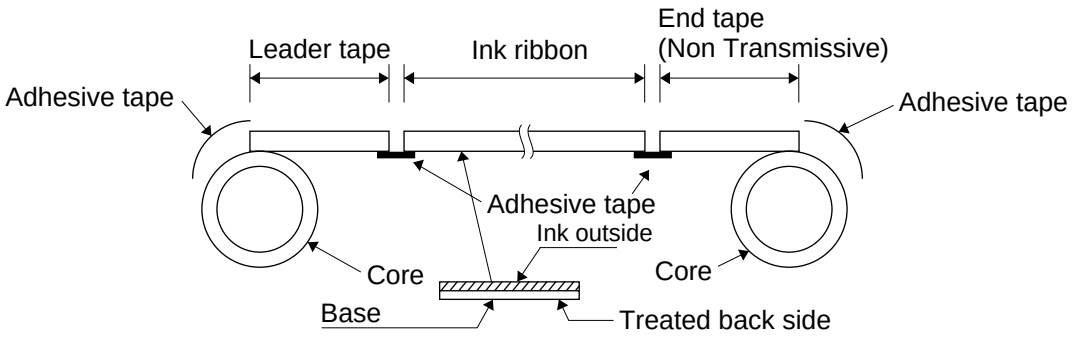


Fig. 2-8 Connection between leader tape and ribbon

2.3 CARE AND HANDLING OF THE MEDIA AND RIBBON

***CAUTION**:*
Be sure to read carefully and understand the Supply Manual. Use only media and ribbon which meet specified requirements. Use of non-specified media and ribbon may shorten the head life and result in problems with bar code readability or print quality. All media and ribbon should be handled with care to avoid any damage to the media, ribbon or printer. Read the following guideline carefully.

- Do not store the media and ribbon for longer than the manufactures recommended shelf life.
- Store media rolls on the flat end, do not store them on the curved sides as this might flatten that side causing erratic media advance and poor print quality.
- Store the media in plastic bags and always reseal after opening. Unprotected media can get dirty and the extra abrasion from the dust and dirt particles will shorten the print head life.
- Store the media and ribbon in a cool, dry place. Avoid areas where they would be exposed to direct sunlight, high temperature, high humidity, dust or gas.
- The thermal paper used for direct thermal printing must not have the specifications which exceed Na^+ 800 ppm, K^+ 250 ppm and CL-500 ppm.
- Some ink used on pre-printed labels may contain ingredients which shorten the print head's product life. Do not use labels pre-printed with ink which contain hard substances such as carbonic calsium ($CaCO_3$) and kaolin (Al_2O_3, $2SiO_2$, $2H_2O$).
- Avoid using media containing SiO_2 or talc which wears the print head protection layer.

For further information please contact your local distributor or your media and ribbon manufacturer.

3. OPTIONAL KIT

Option Name	Type	Use
Cutter module	B-4208-QM	This cutter module uses a swing cutter. It cuts backing paper of labels and tag paper automatically in "stop and cut" mode. To purchase the cutter module, please contact your distributor or TOSHIBA TEC H.Q. can assist in finding one for you.
Strip module	B-4908-H-QM	This strip module strips the label from the backing paper with the take-up block and strip block. When the rewinder guide plate is attached, the tag paper and label with backing paper are wound. To purchase the strip module, please contact your distributor or TOSHIBA TEC H.Q. can assist in finding one for you.
PCMCIA interface board	B-8700-PC-QM	This board enables the following PCMCIA cards to be used. * LAN card: 3 COM EtherLink®III (recommended) * ATA card: Conforming to PC card ATA standard * Flash memory card: 4MB card

3.1 CUTTER MODULE: B-4208-QM

This compact cutter module uses a built-in swing cutter. The specification is provided below:

① Cutting method ..... Swing cut
② Cut mode ..... Stop cut
③ Minimum cut length ..... Tag paper:25.4 mm, Label:38 mm
④ Home position switch .... Micro switch

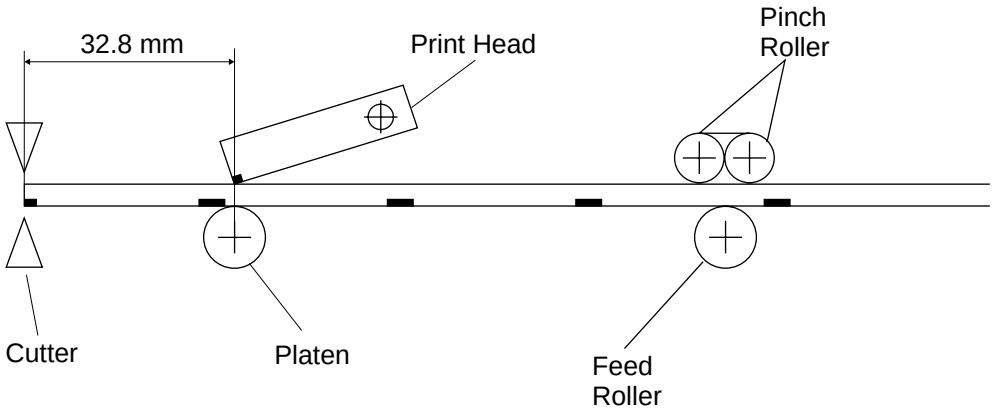


Fig. 3-1

3.2 STRIP MODULE: B-4908-H-QM

This strip module strips labels from the backing paper one by one using an exclusive DC motor which turns the strip roller to feed the backing paper. No backing paper take-up is provided.

① Print speed: Max.4 ips
② Available minimum label length: 25.4 mm
③ Available minimum label width: 98.6 mm

3.3 PCMCIA INTERFACE BOARD: B-8700-PC-QM

The PCMCIA Interface board allows use of the following ATA card, LAN card, or flash memory card when connected to the CPU PC board.

Type	Maker	Description	Remarks
ATA Card	A card conforming to the PC card ATA standard		———
LAN Card	3 COM	Ether Link III 3C589D PC card	Install into the slot (2) only. (This card installed into the slot (1) will not work.)
Flash Memory Card (4 MB)	Maxell	EF-4M-TB CC	———
		EF-4M-TB DC	

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TEC

TEC Thermal Printer

B-880 SERIES

Maintenance Manual

Document No. **EO18-33007**

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(Revised **Apr., 2002**)

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CAUTION:

1. *This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
2. *The contents of this manual may be changed without notification.*
3. *Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.*

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1. UNPACKING

1.1 PROCEDURE

1) Open the carton.
2) Unpack the accesories from the carton
3) Unpack the side pads (L)/(R) and the printer from the carton.
4) Place the printer on a level surface.

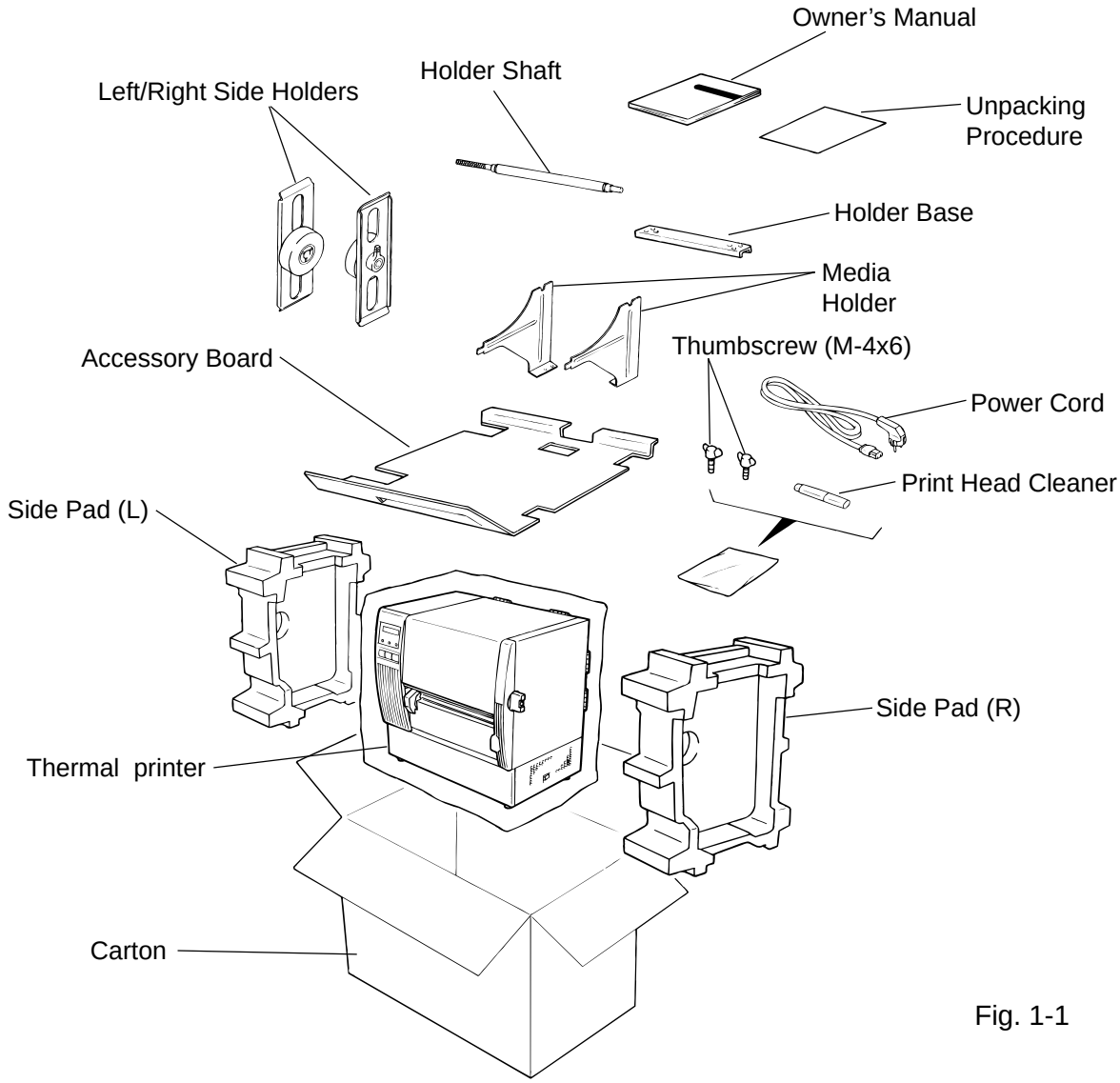


Fig. 1-1

1.2 CHECKS

1) Check for damage or scratches on the machine.
2) Confirm that none of the accessories are missing.

NOTE: *Keep the carton and side pads for later transport.*

2. MAJOR UNIT REPLACEMENT

WARNING!

Disconnect power cord before replacing important parts.

CAUTION:

1. *NEVER separate the ribbon motors from the attaching plate (bracket), because doing so will change their adjustment. (See Fig. 2-7)*
2. *NEVER remove the two screws painted red on the side of the print block. (See Fig. 2-10)*
3. *NEVER remove screws unless directed to do so in this manual. Removing screws may change pre-set adjustments.*

1) Turn the power off.
2) Open the right side and top covers.
3) Remove the six screws (FL-4x6, B-4x6 and B-3x8) to detach the left side cover.
4) Remove the (B-3x8) screw to remove the bottom plate.

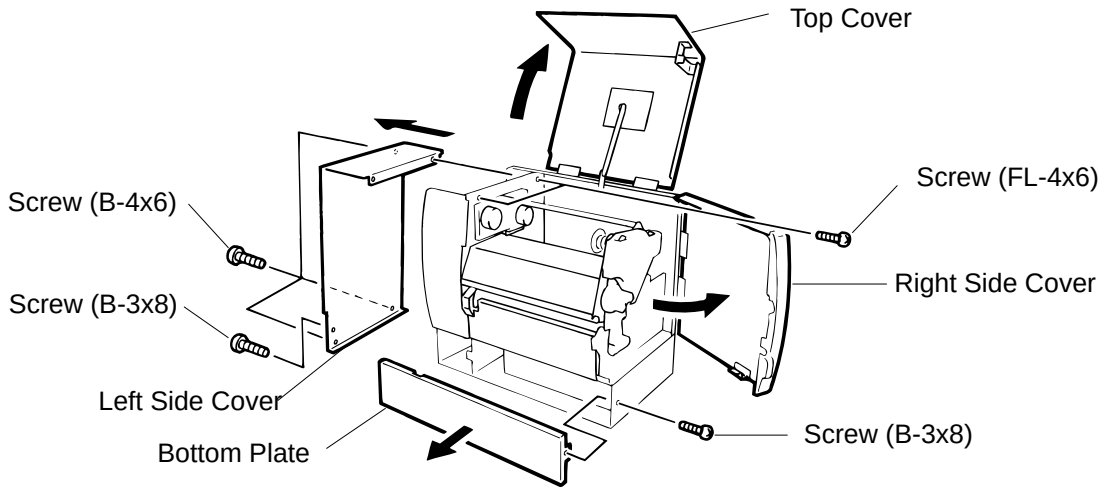


Fig. 2-1

NOTE: *Instructions to open the top and right side covers and to remove the left side cover are omitted from each removal/installation procedure provided below.*

■ Lubrication

CAUTION:

1. *Lubrication: During parts replacement*
2. *Kinds of oil: FLOIL G-488: 1 Kg can. (Parts No. 19454906001).*
3. *Do not spray the inside of the printer with lubricants. Unsuitable oil can damage the mechanism.*

All machines are generally delivered in their best condition. Efforts shoud be made to keep them that way. Lack of oil, or the presence of debris or dust, may cause an unexpected failure. To maintain in optimal operating condition, periodically clean the machine and apply the proper kinds of oil to each part in which librication is needed.

Although the frequency of lubrication varies according to how often the machine is used, as a minimum it is necessary to lubricate before any part becomes dry. It is also necessary to wipe off excessive oil or it will collect dirt.

2.1 REPLACING THE CPU PC BOARD

CAUTION:
Replace only with the same type and rated fuse for continued protection against risk of fire.

1) Disconnect the 3 harnesses from CN2, CN5, and CN7 on the CPU PC Board.

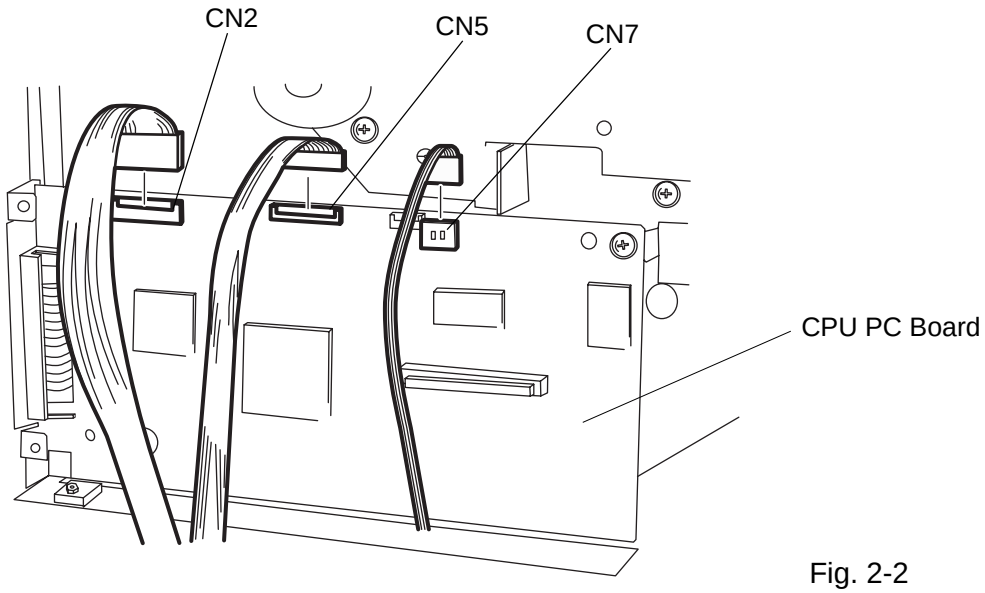


Fig. 2-2

2) Remove the 3 screws (SM-3x5 and SM-3x6) to detach the CPU PC board.

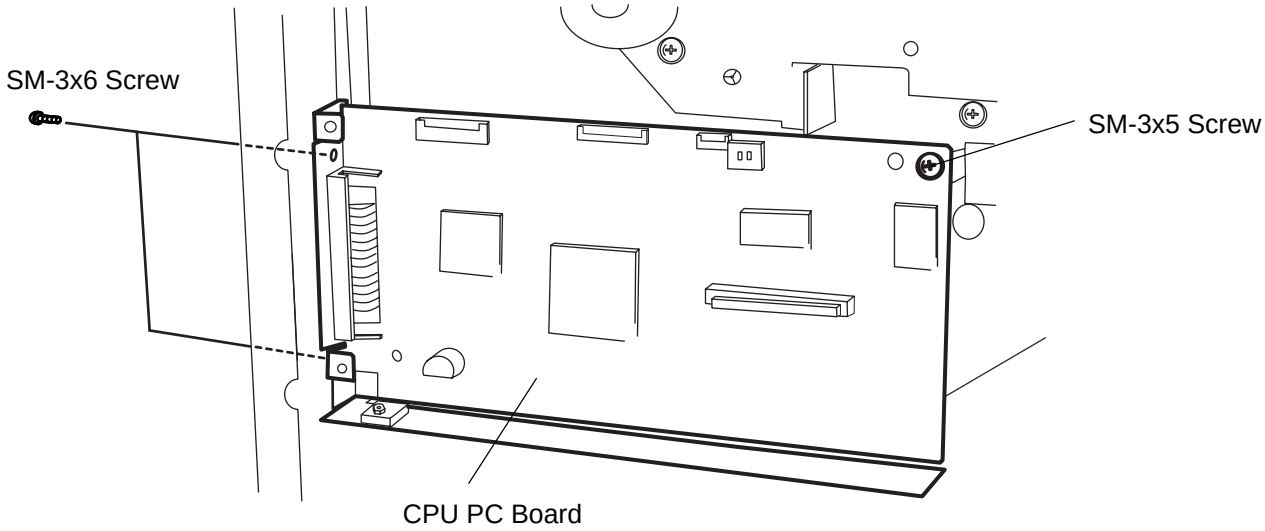


Fig. 2-3

3) Replace the CPU PC board and reassemble in the reverse order of removal.

CAUTION:
Be careful when replacing the CPU PC board, since a non-resettable counter (IC15) is installed on this board. (Refer to section 6.2.1 Maintenance Counter Printing.) If this counter should be reset, replace IC15.

2.2 REPLACING THE PS UNIT

CAUTION:
Replace only with the same type and rated of fuse for continued protection against risk of fire.

1) Disconnect the PS cable from CN2 on the I/O PC board.
2) Remove the two screws (FL-4 x 6) to detach the PS unit. Pushing the AC power inlet from behind will ease the removal of the PS unit.
3) Disconnect the PS cable from the PS unit.

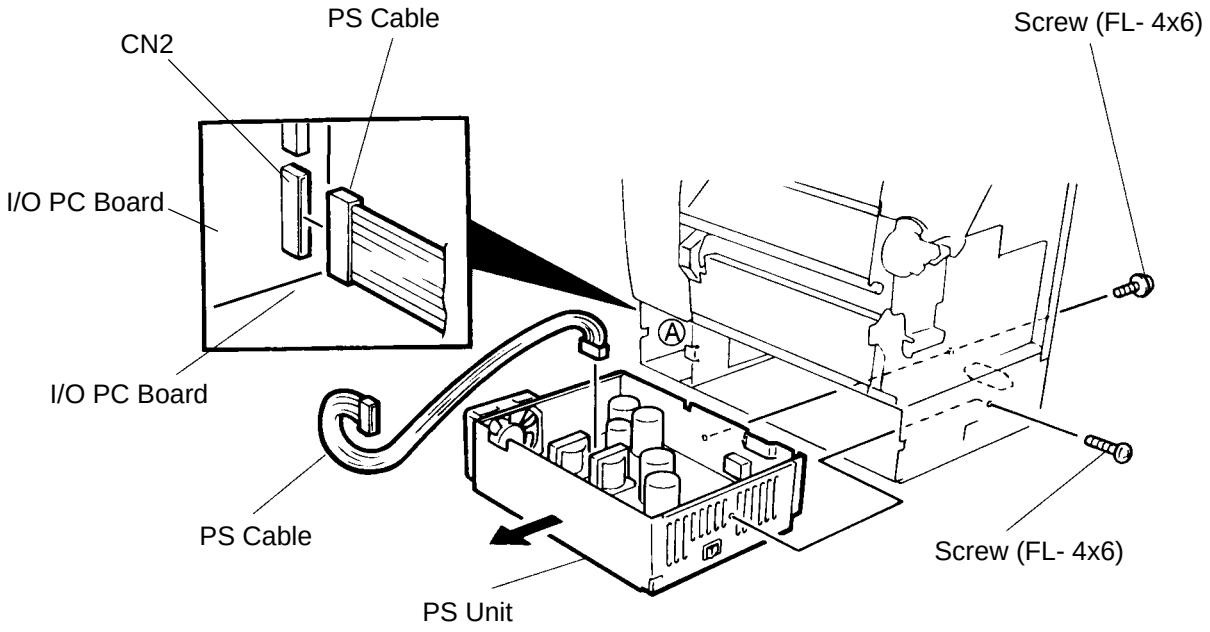


Fig. 2-4

4) Replace the PS unit and reassemble in the reverse order of removal. Insert the PS cable into the notch Ⓐ.

2.3 REPLACING THE STEPPING MOTOR

1) Remove the 4 screws (FL-4x6) to detach the front plate.

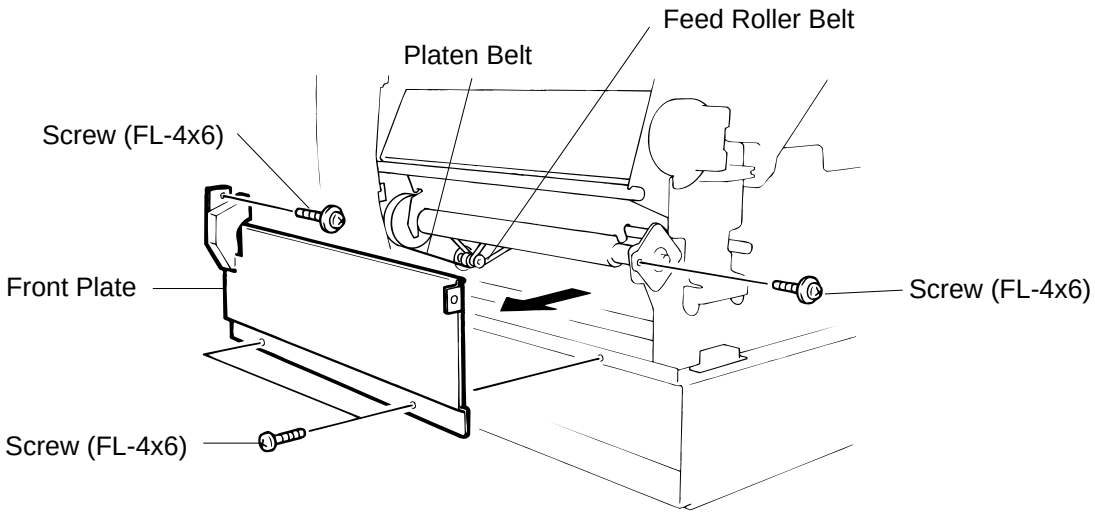


Fig. 2-5

2) Disconnect the cable from CN14 on the I/O PC board.
3) Remove the two screws (SM-4x8), take the two belts off the pinion gear, and remove the stepping motor.

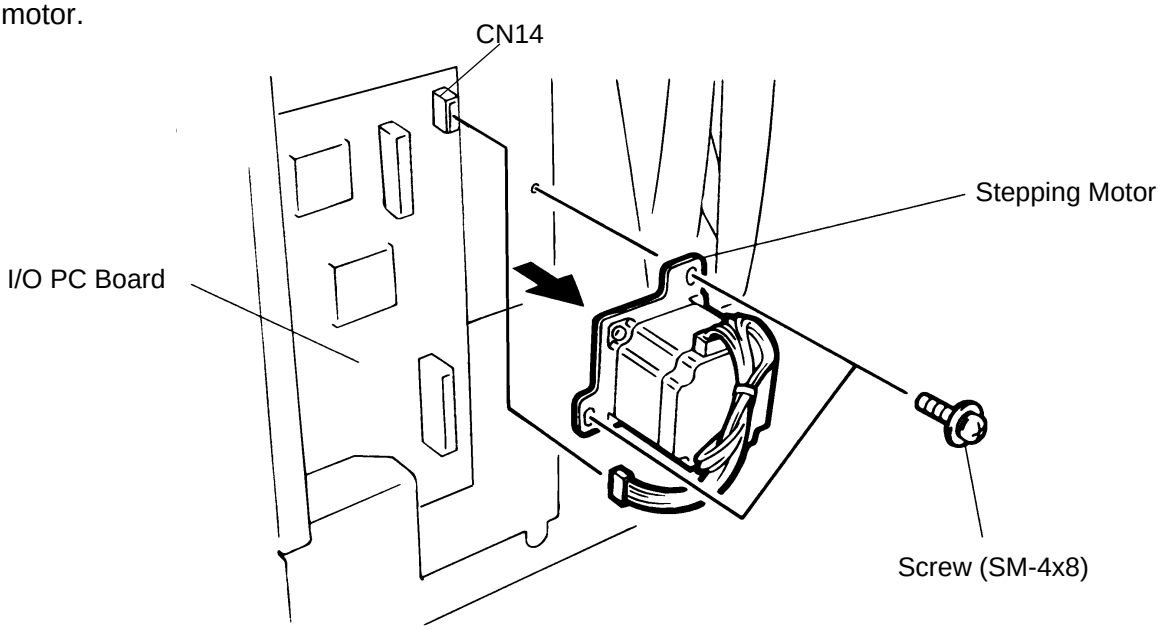


Fig. 2-6

4) When replacing the stepping motor, place the platen belt around the pinion gear first, then the feed roller belt, so that the partition is positioned between the two belts. Press down on the stepping motor with 3.5 Kg – 300 g force and secure it so the platen belt and feed roller belt have no slack, are engaged ,and evenly tense.
5) Reassemble in the reverse order of removal.

2.4 REPLACING THE RIBBON MOTORS

CAUTION:
NEVER separate the ribbon motor from the attaching plate because doing so will change their adjustment.

1) Detach the connector and remove the two SM-3x5B screws to detach the ribbon motors.

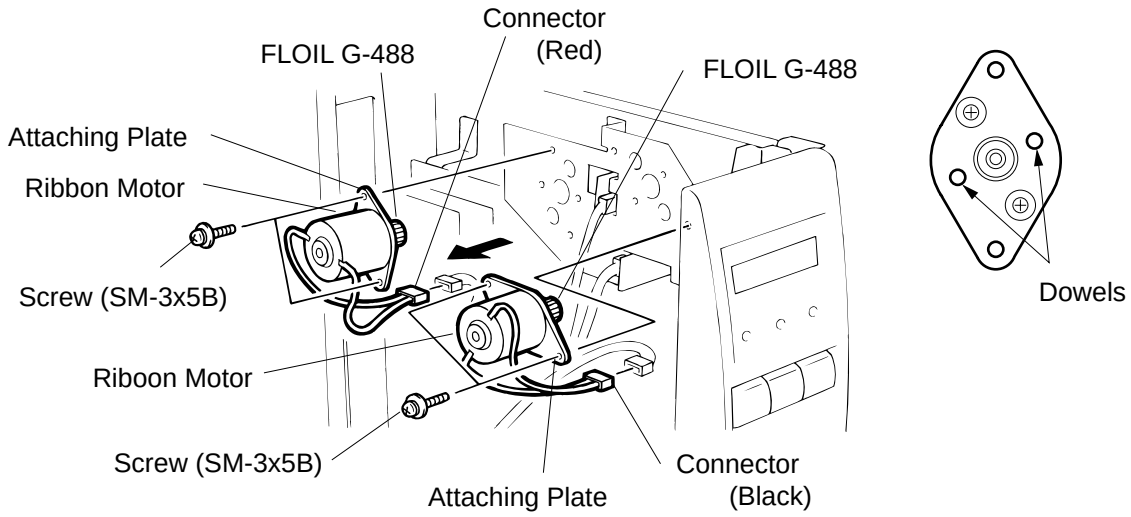


Fig. 2-7

2) Replace the ribbon motors, then align the dowels to attach the ribbon motors. Reassemble in the reverse order of removal.

2.5 REPLACING THE SOLENOID

NOTE: *This procedure can be done without removing the left side cover.*

1) Remove the two SM-4x8B screws, detach the connectors, and remove the solenoid unit (R).
2) Remove the two SM-4x8B screws, disconnect the cables from CN1, CN2 and CN3 on the RSV2 PC board and detach the solenoid unit (L).

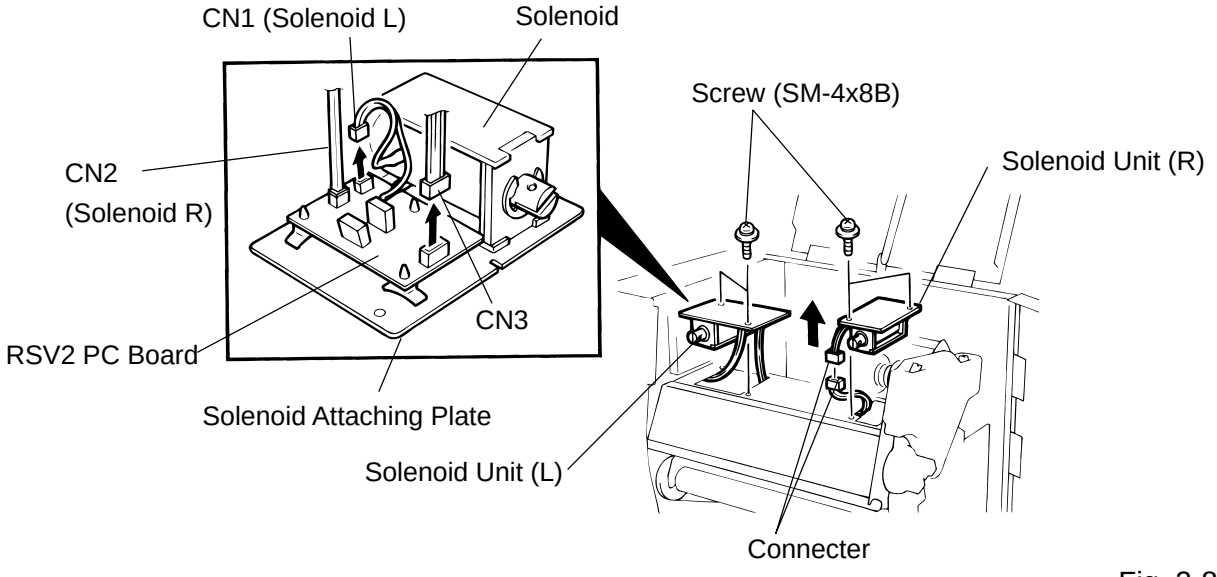


Fig. 2-8

3) Remove the two SM-3 x 6B screws each from the solenoid units (L) and (R) to detach the solenoid.
4) Replace the solenoid and attach it to the solenoid attaching plate. Be careful of the differences in length of the solenoid cables when installing the solenoid.
5) Assemble the solenoid unit so that the head up link engages the spring pin.

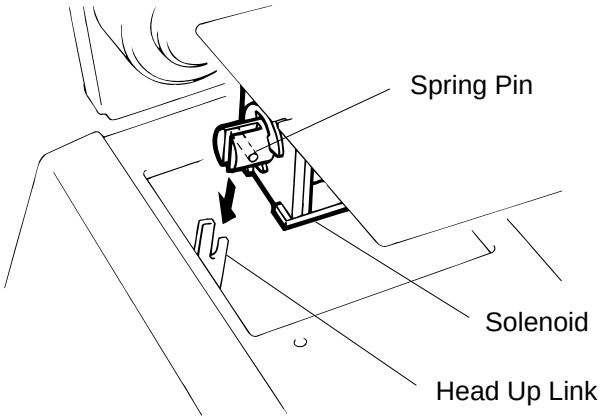


Fig. 2-9

NOTE: *Make sure to remove any dust that appears during removal or installation because it may affect the print quality.*

> ***CAUTION:***
> Take care to orient the screws so that they are vertically aligned with the solenoid attaching plate.

6) Insert piled 10 pieces of tag paper of 8 inches (203.2 mm) in width, 0.16 mm in thickness (I-BEST-S is recommended) between the print head and the platen. Then turn the head lever to the LOCK position.
7) Press and hold the link against the solenoid, and then press and fit the solenoid unit sungly to the link. Secure the solenoid unit with the screws.
8) Reassemble in the reverse order of removal.

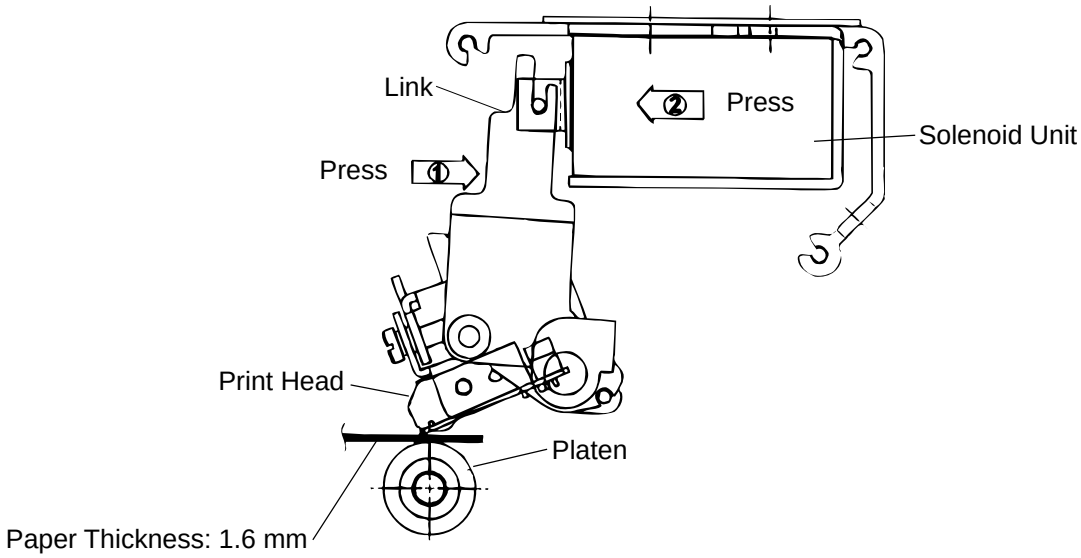


Fig. 2-10

2.6 REPLACING THE PRINT HEAD

CAUTION:

1. NEVER touch the element when handling the print head.
2. NEVER touch the connector pins to avoid damage to the print head by static electricity.
3. NEVER remove the two screwws painted red on the side of the print block.

NOTE: *This procedure can be done without removing the left side cover.*

1) Remove the two (B-4x4) screws to detach the head cover plate.
2) Pull right to remove the front shaft.

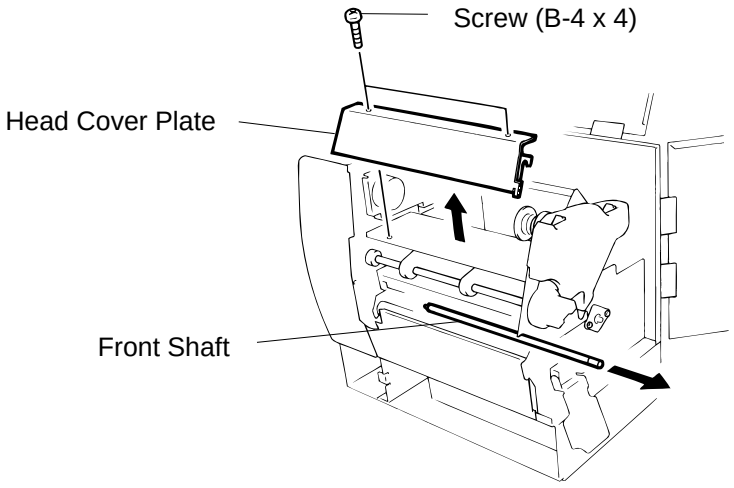


Fig. 2-11

3) Turn the head lever counterclockwise to lift the print head.
4) Remove the head fixing screw and pull out the print head.
5) Disconnect the two cables and remove the print head.

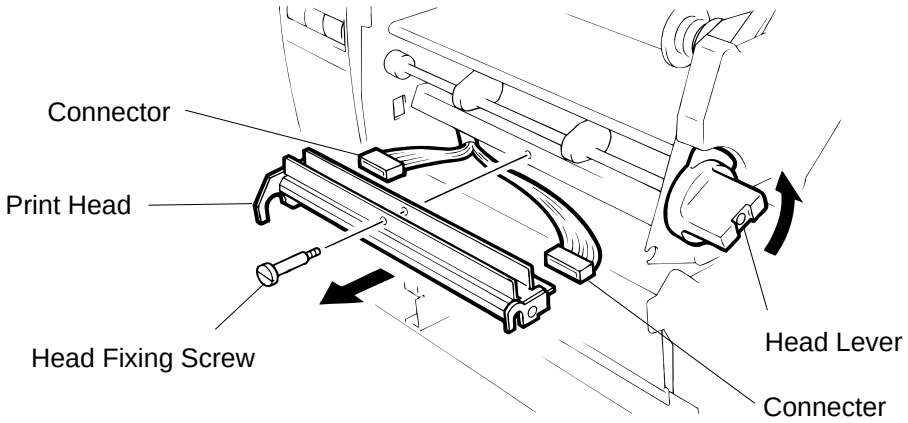


Fig. 2-12

NOTE**:** *Never remove the bracket.*

6) Replace the print head and reassemble in the reverse order of removal.
7) Refer to page 6-69 and clear the maintenance counter.
8) Refer to page 6-54 and perform a test print.

2.7 REPLACING THE PLATEN

1) Remove the front plate. (Refer to Fig. 2-5.)
2) Loosen the two screws (SM-4 x 10C) securing the stepping motor.
3) Remove the (FL-4 x 6) screw to detach the platen positioning plate.
4) Take the platen belt off the platen pulley, move the platen fully to the right and remove the platen from the left end.

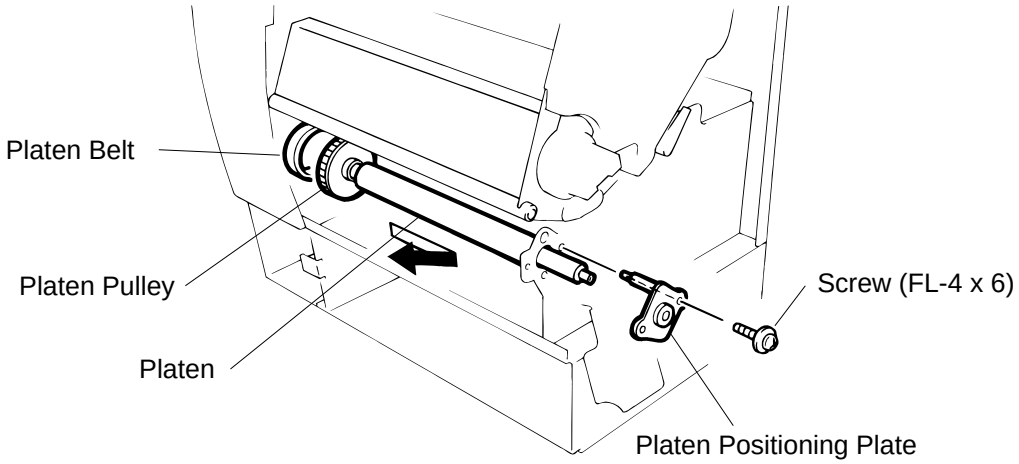


Fig. 2-13

5) Replace and install the platen, then place the platen belt around the platen pulley.
6) Install the platen positioning plate.
7) Press down on the stepping motor with 3.5 Kg – 300 g force and secure it so the platen belt and the feed roller belt have no slack, are engaged and evenly tense.
8) Reassemble the remaining parts in the reverse order of removal.

2.8 REPLACING THE ROLLER BELT AND FEED ROLLER

1) Lower the pinch roller lever.
2) Remove the white screw to detach the ribbon end sensor plate.
3) Remove the FL-3 x 5 screw, cut the cable band and remove the head-up switch.
4) Detach the connector of the ribbon end sensor.
5) Removal the pinch roller block.

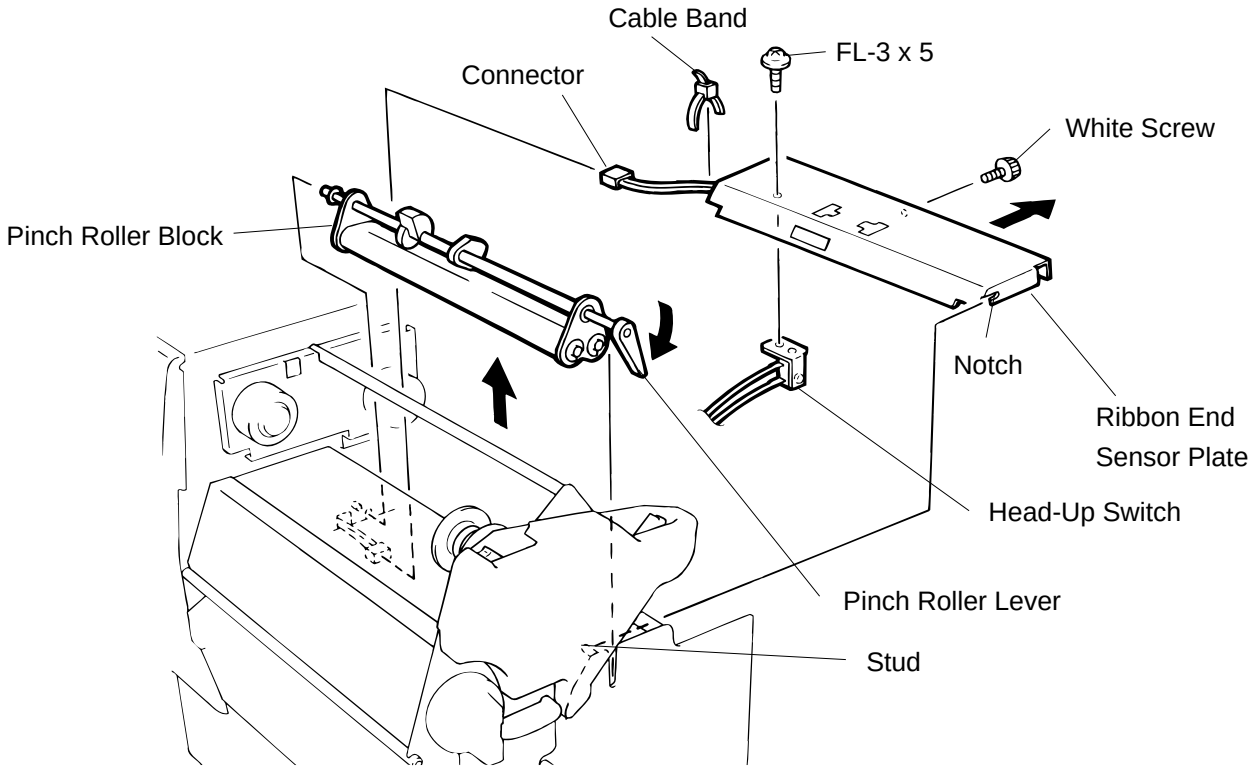


Fig. 2-14

NOTE: *Fit both sides of the studs into the notches when installing the ribbon end sensor plate.*

6) Remove the four E-rings (E-5), pinch roller holder, bush, pinch roller washer, and then roller belt.

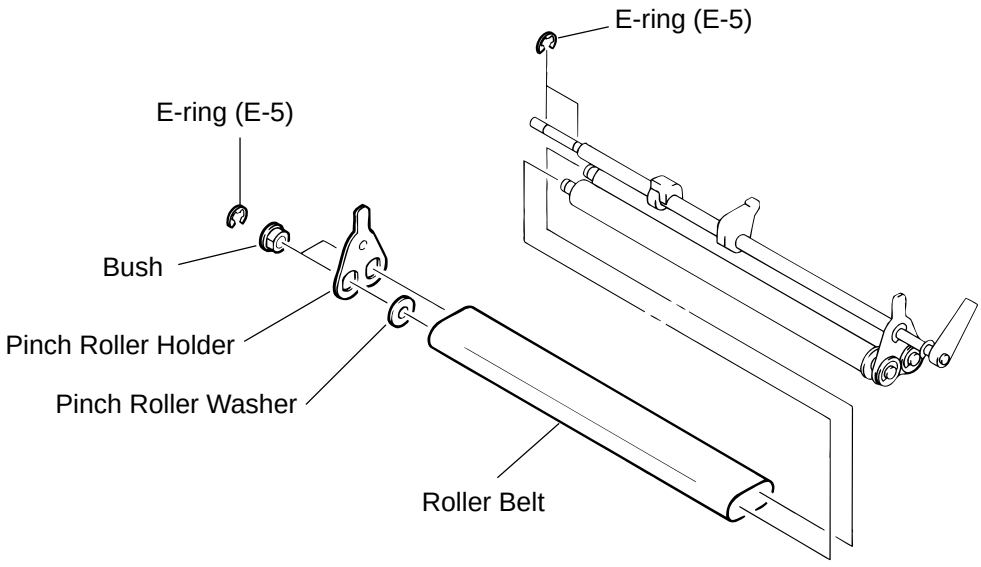


Fig. 2-15

7) Remove the two (FL-4x6) screws and detach the media plate.
8) Remove the two (FL-4x6) screws and detach the media guide unit.
9) Loosen the two (SM-4x10C) screws securing the stepping motor.
10) Remove the two screws to detach the feed roller positioning plate.
11) Take the feed roller belt off the feed roller, move the feed roller fully to the left and remove the feed roller form the right end.

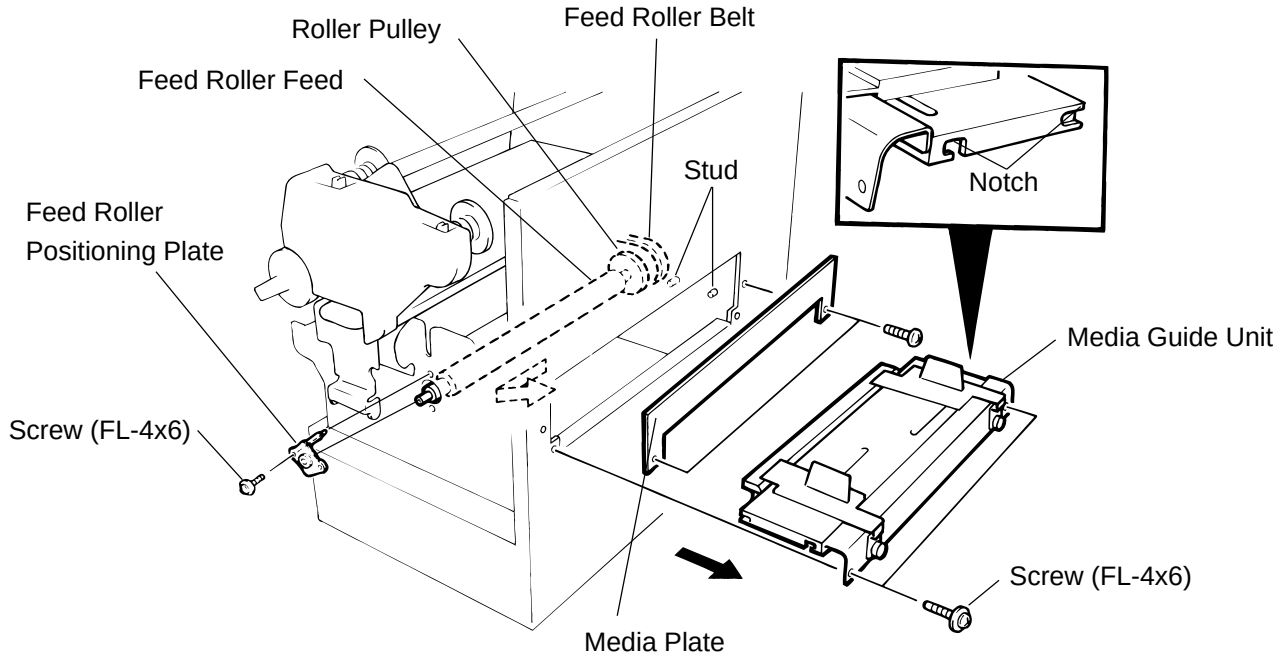


Fig. 2-16

NOTE: *Fit both sides of the studs into the notches when installing the media guide unit.*

12) Replace and install the feed roller, place the feed roller belt around the feed roller pulley.
13) Install the feed roller positioning plate.
14) Press down on the stepping motor with 3.5 Kg – 300 g force and secure it so the platen belt and the feed roller belt have no slack, are engaged and evenly tense.
15) Reassemble the remaining parts in the reverse order of removal.

2.9 REPLACING THE MEDIA SENSOR

CAUTION:

1. *When using the fixed sensor, line up the feed gap sensors between the upper and lower sensors.*
2. When shipped from the factory, the black mark sensor is positioned at the center of the effective print area and the feed gap sensor is located 10 mm left of center as viewed from the front.

1) Detach the 4 connectors from the fixed/movable media sensors.
2) Remove the two screws (FL-3 x 4) and the sensor holder to detach the media sensor unit.
3) Turn the knob of the sensor shaft clockwise and remove the movable media sensor.
4) Remove the E-ring (E-3) from the sensor shaft and detach the lower fixed media sensor.

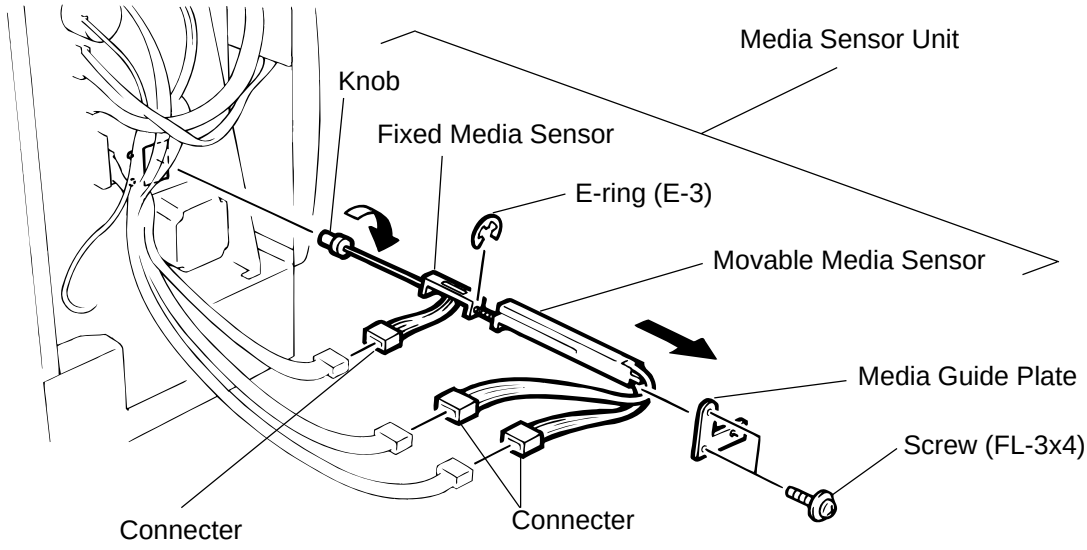


Fig. 2-17

5) Remove the white screw to detach the media guide plate.
6) Remove the two SM-3 x 6B screws, then unclamp and detach the upper fixed media sensor.

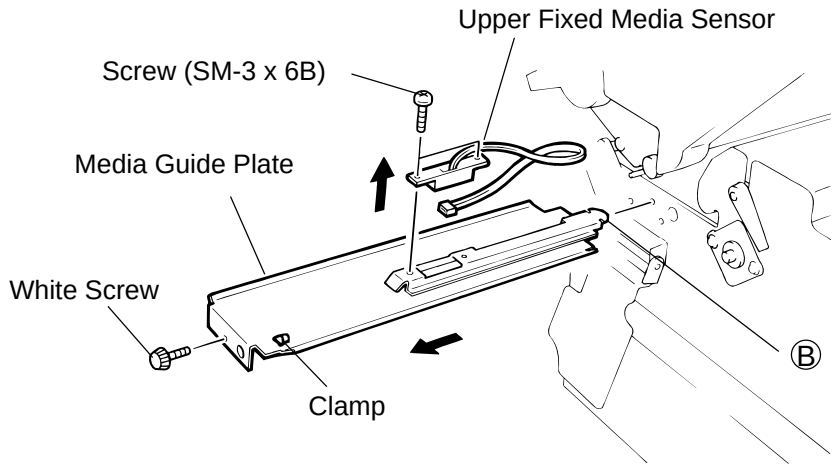


Fig. 2-18

7) Replace the fixed/movable media sensors and reassemble in the reverse order of removal.

2.10 REPLACING THE I/O PC BOARD

1) Disconnect the 13 harnesses from CN1 to CN3 and CN5 to CN14 on the I/O PC board. (See Fig. 2-19)
2) Remove the two SM-3x5 screws and one SM-4x8 screws from the I/O PC board. Remove the I/O PC board from the printer by releasing it from the locking supports. (See Fig. 2-20)
3) Replace the I/O PC board with a new one and reassemble in the reverse order of removal.

Sensor Adjustment

I/O PC Board (Parts Side)

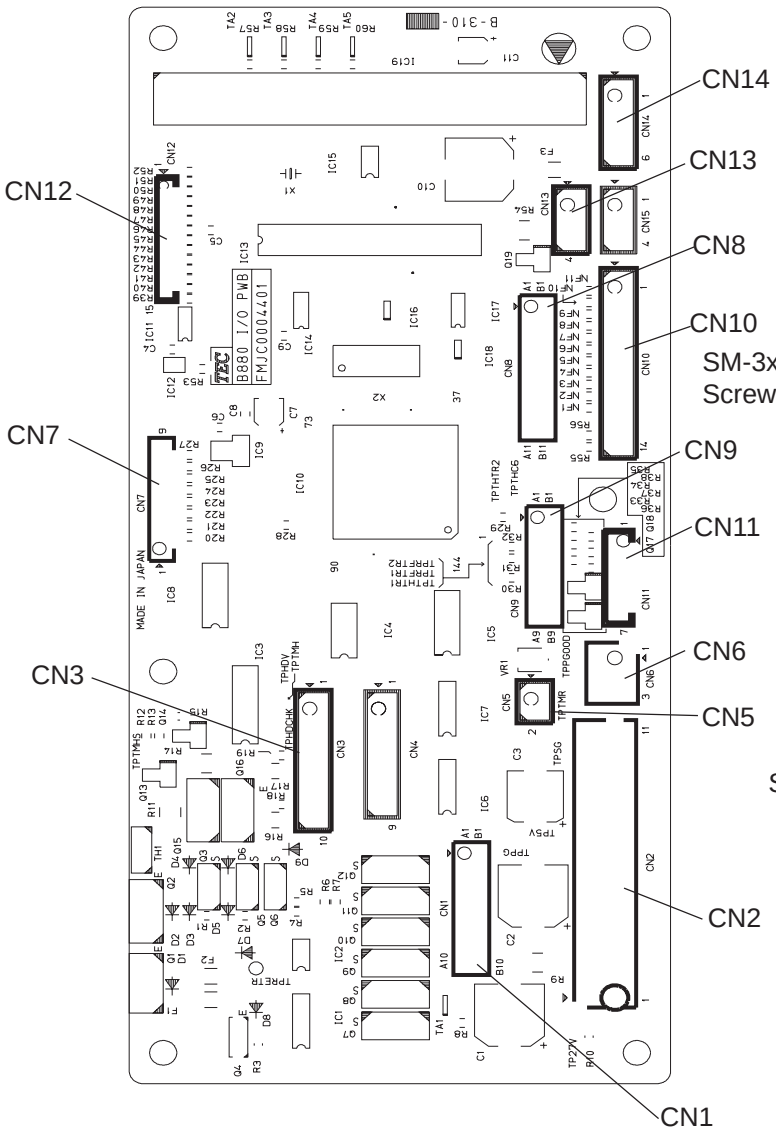


Fig. 2-19

Printer (Left Side)

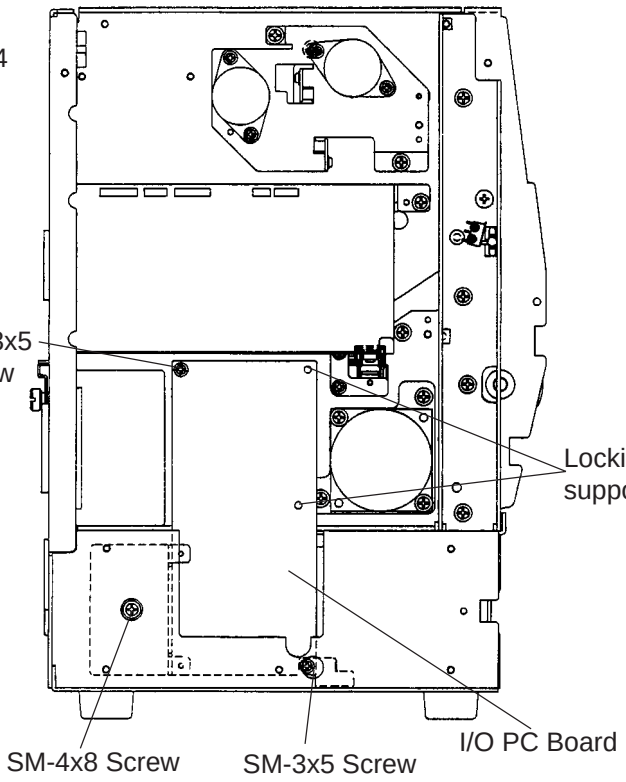


Fig. 2-20

Sensor Adjustment

After replacing the I/O PC board or changing ribbon type, be sure to adjust the sensors in the following procedure.

Ribbon End Sensor

1) Set the ribbon so that the ribbon end sensor can detect the ribbon. Then turn on the power.
NOTE: *Use TOSHIBA TEC-approved ribbon (TTP-110).*
2) Measure the voltage between TPRETR pin on the I/O PC board and the printer inner plate (GND) with a oscilloscope, and adjust the voltage to 3.0–0.2V by turning VR1 on the I/O PC board.
3) Set the ribbon end portion (not ink portion) so that the ribbon end sensor can detect it. Measure the voltage again. If it is over 0.4V, re-adjust the voltage from step (2) again.
4) After the adjustment is successfully made, turn off the printer and reassemble the left side cover.

I/O PC Board (Parts Side)

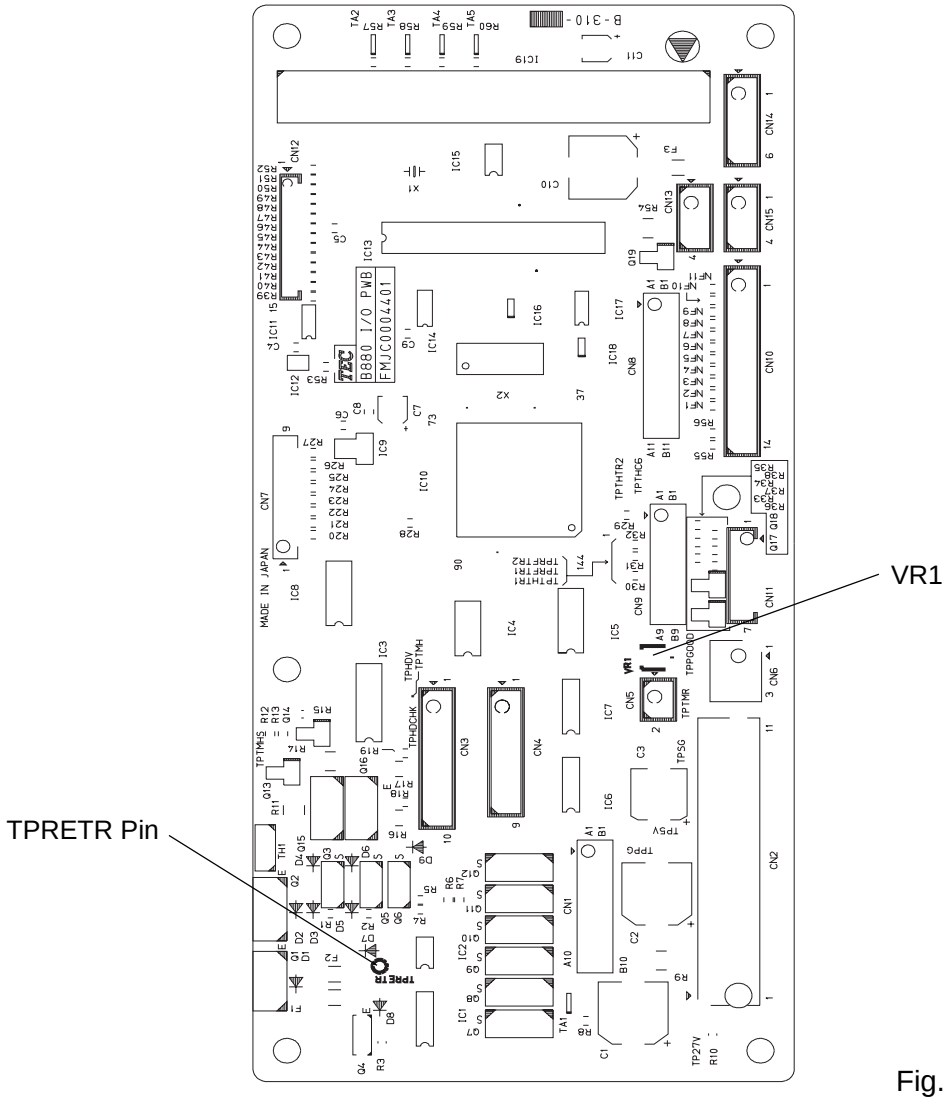


Fig. 2-21

Black Mark Sensor

Refer to the adjustment procedure for the black mark sensor (Section 6.5.2) which is adjusted by key entries in system mode.

Feed Gap Sensor

Refer to the adjustment procedure for the feed gap sensor (Section 6.5.3) which is adjusted by key entries in system mode.

2.11 REPLACING THE EXP I/O PC BOARD

(1) Remove the two SM-3x6 screws to detach the EXP I/O PC board from the rear cover.
(2) Disconnect the harness from CN1 on the EXP I/O PC board.

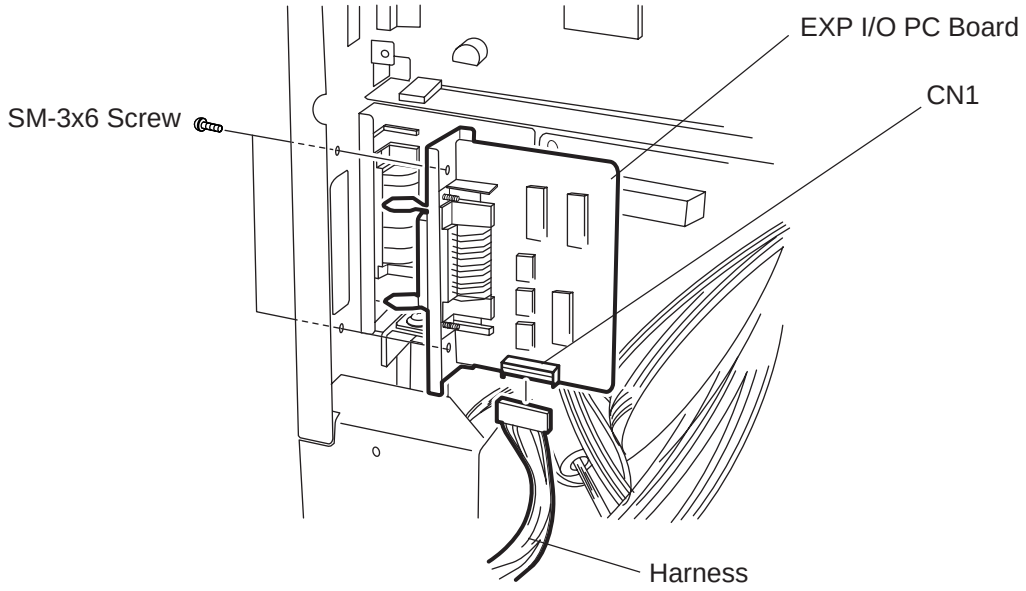


Fig. 2-22

(3) Replace the EXP I/O PC board with a new one, then reassemble in the reverse order of removal.

2.12 REPLACING THE CENTRO PC BOARD

(1) Refer to Section 2.11 to detach the EXP I/O PC board.
(2) Remove the two SM-3x6C screws to detach the CENTRO PC board from the rear cover.
(3) Disconnect the harness from CN1 on the CENTRO PC board.

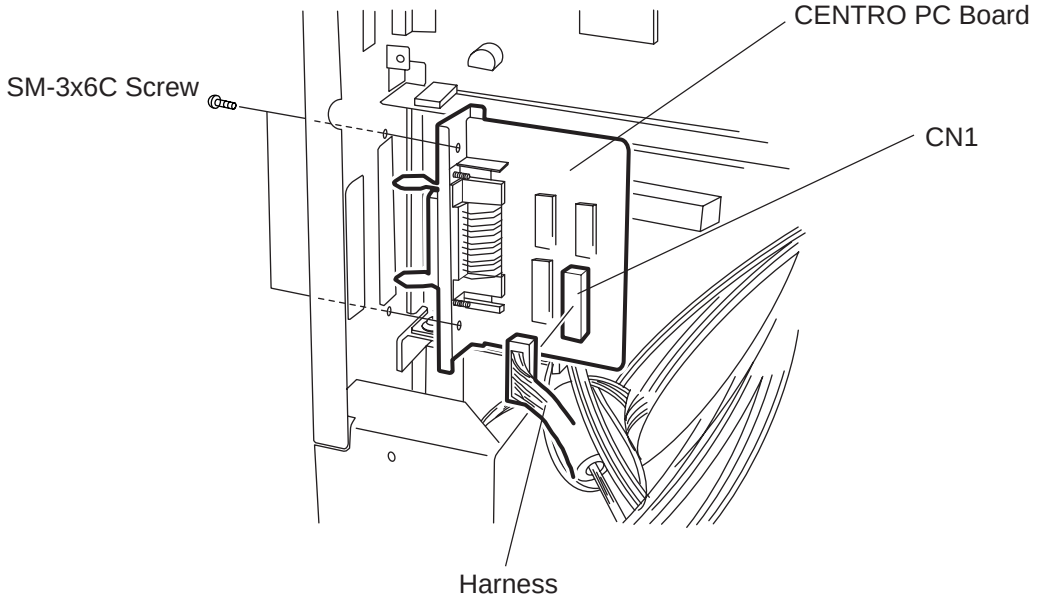


Fig. 2-23

(4) Replace the CENTRO PC board with a new one, then reassemble in the reverse order of removal.

2.13 PERIODIC PARTS REPLACEMENT

No.	Part Name	Part No.	Standard Interval of Replacement
1	Ribbon Motor	FMBB0030501 FMBB0030502	730 Km
2	Solenoid	FMBB0032104 FMBB0032105	1,000,000 times
3	Platen	FMBC0044501	50 Km
4	Feed Roller	FMBC0044601	50 KMm

Since the above intervals are the standard values for a fully maintained machine, they are not guaranteed, The values vary depending on the operating environment (dust or debris) or use of proper media and ribbon.

3. INSTALLATION PROCEDURE FOR OPTIONAL EQUIPMENT

WARNING!
Make sure to unplug the power cord before installing any optional equipment.

3.1 CUTTER MODULE (B-4208-QM)

NOTE: *This module cannot be used together with the B-4908-H-QM strip module. Remove the strip module if it has been attached to the printer.*

Description	Q'ty/Unit	Description	Q'ty/Unit
Cutter Unit	1	Cutter Attaching Screw	2
Cutter	1	Screw (FL-4x6)	2
Cutter Harnes	1	Screw (SM-4x6C)	1
Cutter Support	1	Cleaner	1

1) Open the right side cover and the top cover. (See Fig. 2-1.)
2) Remove the left side cover. (See Fig. 2-1.)
3) Remove the front plate. (See Fig. 2-5.)
4) Remove the screw (SM-4x8B) and two connectors to detach the operation panel.
5) Attach the cutter support to the main frame with the two screws (FL-4x6).

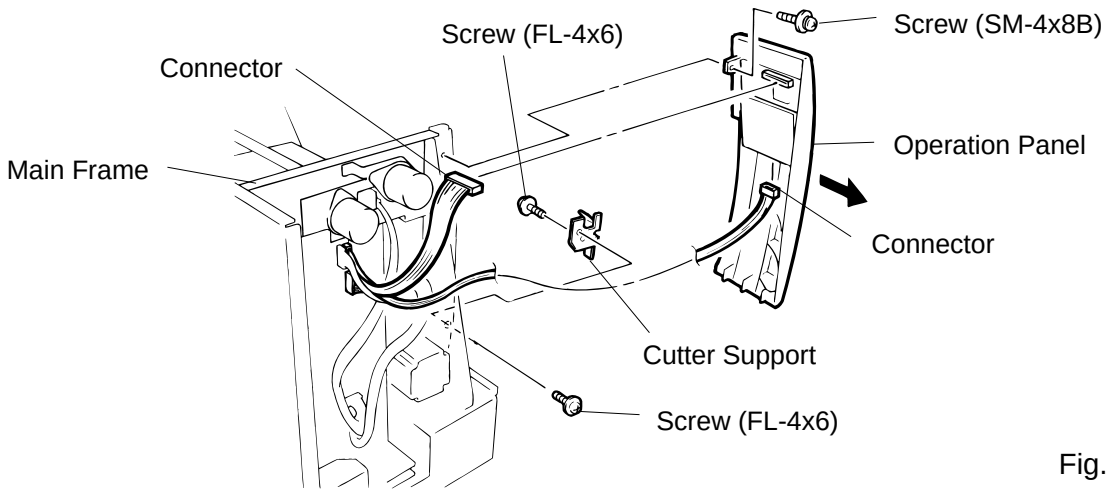


Fig. 3-1

6) Install the cutter unit with the attached four screws (cutter attaching screw, SM-4x6C and FL-4x6).

7) Connect the cutter harness to CN1 on the cutter I/F PC board through the opening of the cutter unit. When installing the cutter, make sure that the cutter guide is not in contact with the platen. If it is, print failure or noise may be caused.

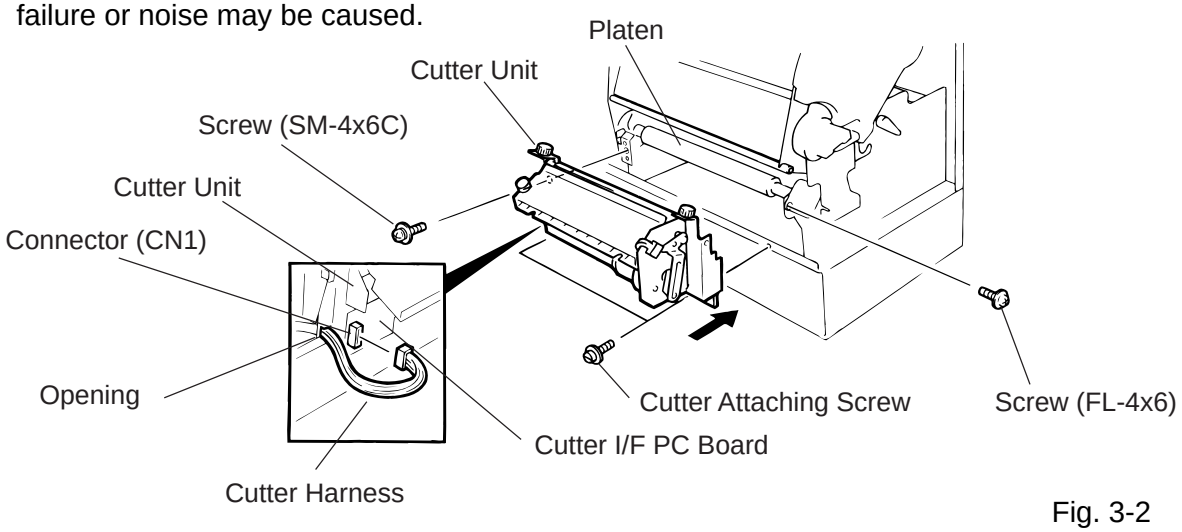


Fig. 3-2

8) Connect the cutter harness to CN4 on the I/O PC board.

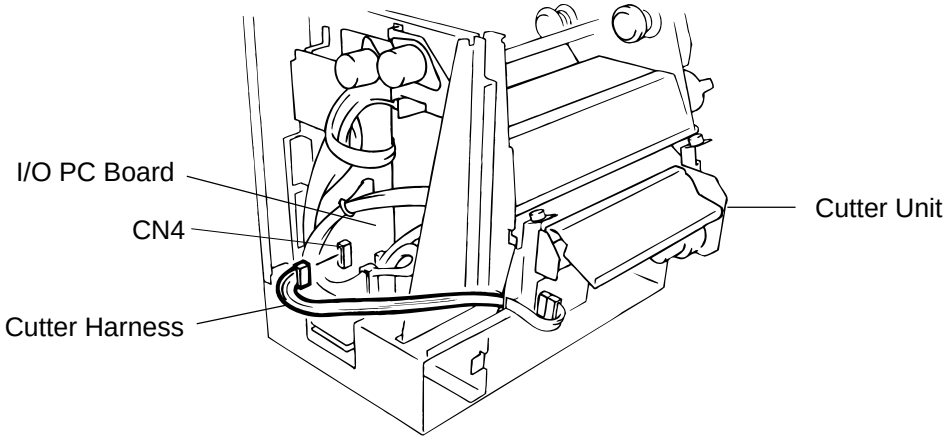


Fig. 3-3

9) Mount the cutter cover with the two screws.

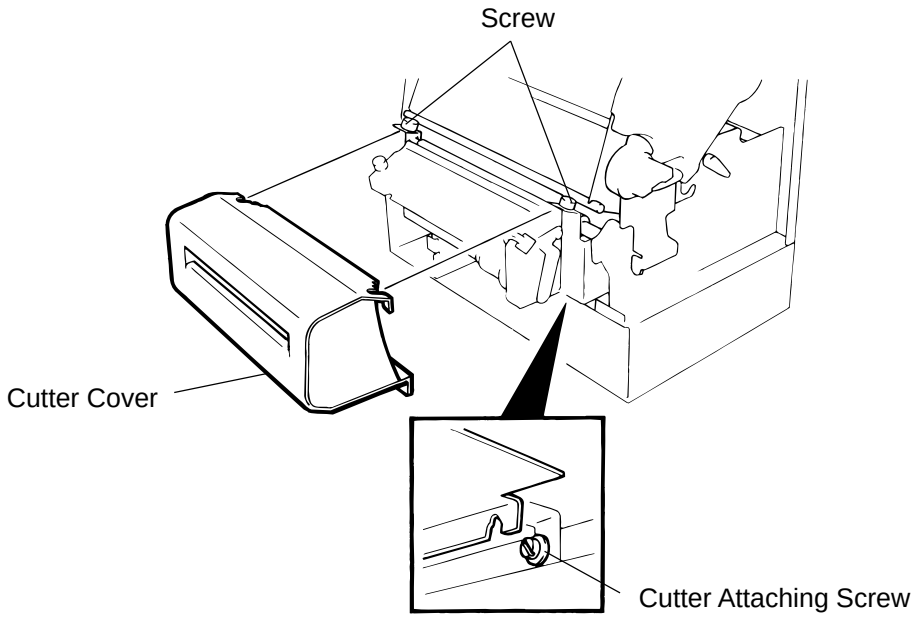


Fig. 3-4

10) Mount the operation panel and the left side cover on the printer.
11) Close the top and right covers.
12) After reassembly is complete, perform a test print to confirm that the cutter works properly. If the print start position becomes misalign when media is fed in the reverse direction, fine adjust the back feed value using the Back Feed Fine Adjustment procedure in diag. mode.

NOTE: *Retain the parts that are removed during installation of the cutter unit. They will be required when the printer is modified to a standard type.*

Removed Parts	Q'ty/Unit	Removed Parts	Q'ty/Unit
Front plate	1	Screw (FL-4x6)	3

■ Adjusting the Cutter Guide Plates

After replacing the cutter unit the following adjustment procedure should be employed to prevent paper jams.

1. Attach the cutter guide plate A with two SM-4 x 6C screw so that the fixed cutter is positioned 0.1 mm to 0.4 mm above the bottom of the cutter guide plate A.
2. Attach the cutter guide plate B with two FL-4 x 8 screws so that there is a clearance of 0.5 mm between the cutter guide plate A and cutter guide plate B using a clearance gauge.

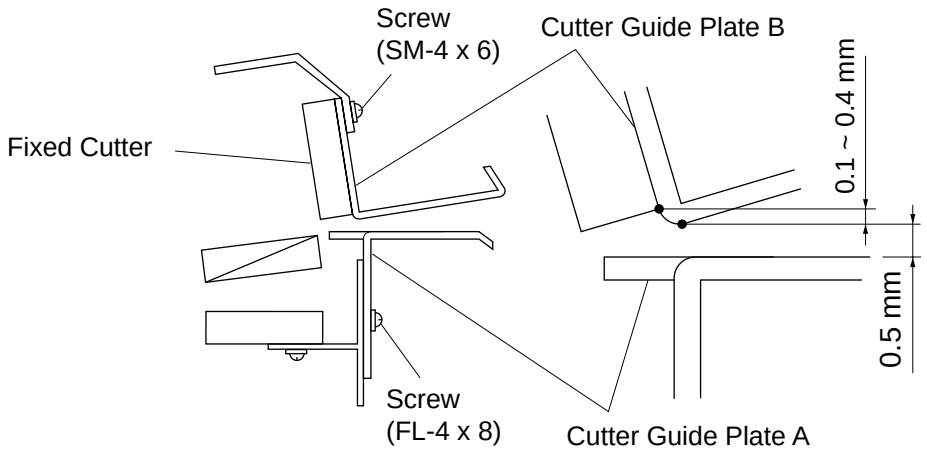


Fig. 3-5

3.2 STRIP MODULE (B-4908-H-QM)

NOTE: *This module cannot be used together with the B-4208-QM cutter module. Remove the cutter module if it has been attached to the printer.*

Description	Q'ty/Unit
Strip Unit	1
Strip Harness	1

1) Open the right side cover and the top cover. (See Fig. 2-1)
2) Remove the left side cover (See Fig. 2-1)
3) Remove the front plate (See Fig. 2-5)
4) Remove the operation panel (See Fig. 3-5)
5) Connect the strip harness to the CN2 on the PWM PC board through the opening of the strip base.
6) Install the strip unit to the printer with the four FL-4 x 6 screws removed in STEP 3.
7) Connect the strip harness to the CN4 on the I/O PC board.
8) Connect the strip sensor harness to the CN15 on the I/O PC board.

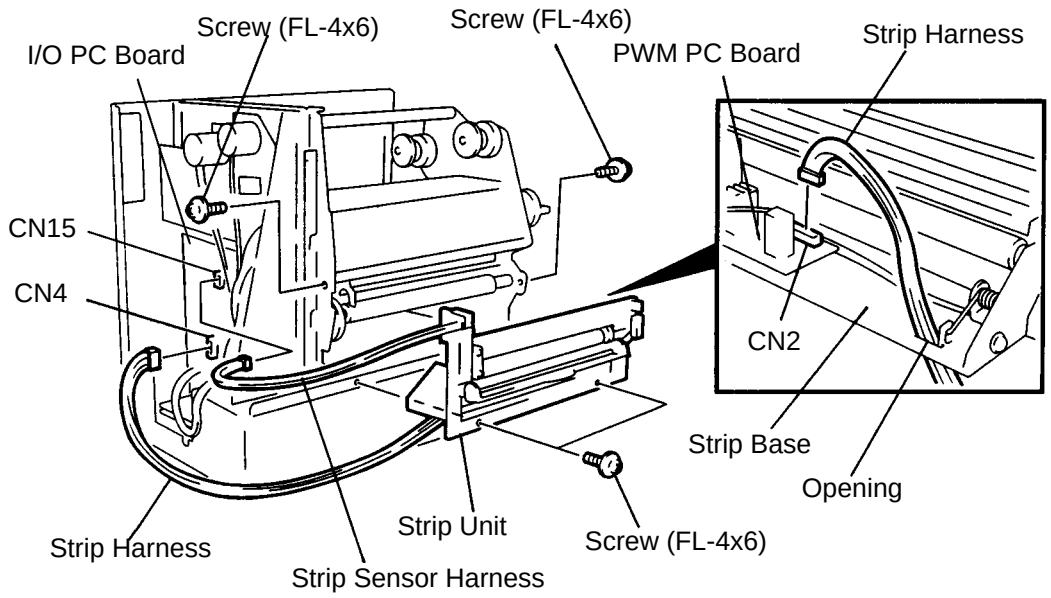


Fig. 3-6

9) Mount the operation panel and the left side cover on the printer.
10) Close the top and right covers.
11) Refer to Section 6.4 of the Maintenance Manual to load the label and make a test print to check forproper strip issue. If not, refer to Section 6.3.2 of the Maintenance Manual to adjust the strip position.

3.3 PCMCIA PC BOARD (B-8700-PC-QM)

Description	Q'ty/Unit
Installation Manual	1
PCMCIA PC Board	1
SM-3x8 Screw	4
Ferrite Core	1
PCB Holder Plate	1

1) Turn the power off.
2) Open the right side and top covers (See Fig. 2-1).
3) Remove the six screws (FL-4x6, B-4x6 and B-3x8) to detach the left side cover. (See Fig. 2-1).
4) Remove the two FL-3x5 screws to detach the blind plate.

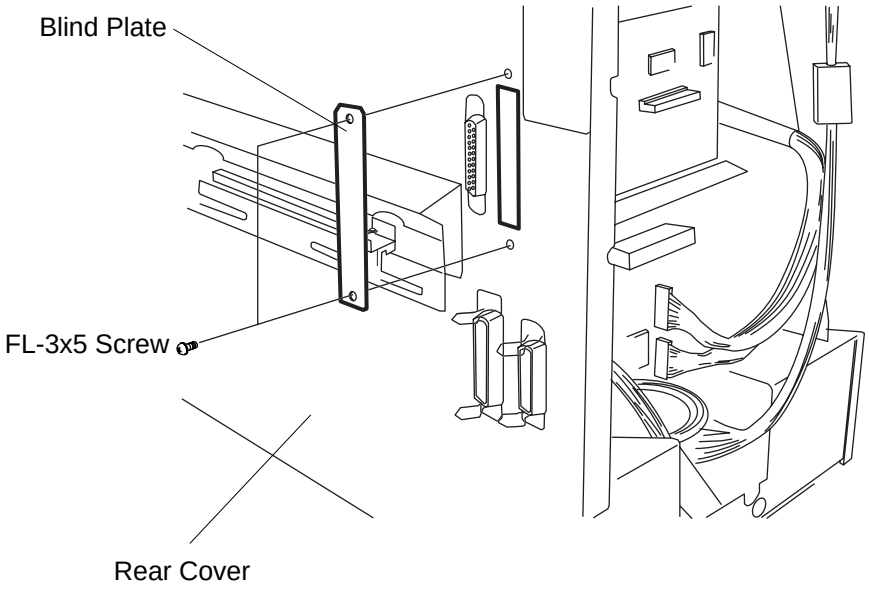


Fig. 3-7

5) Detach the three harnesses from CN2, CN5 and CN7 on the CPU PC board.

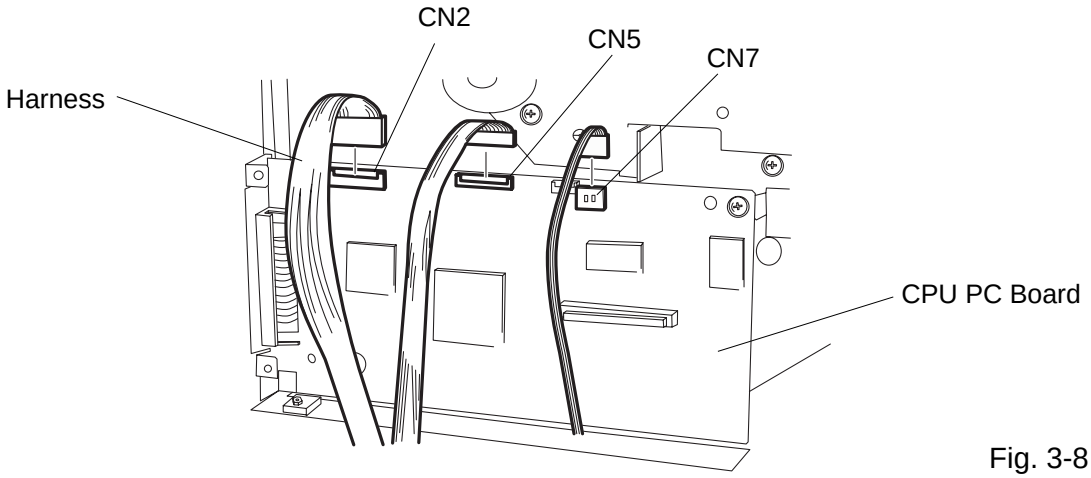


Fig. 3-8

6) Fix the PCB holder plate to the CPU PC board with the SM-3x8 screw so that the PCB holder plate aligns with the PCB support plate.

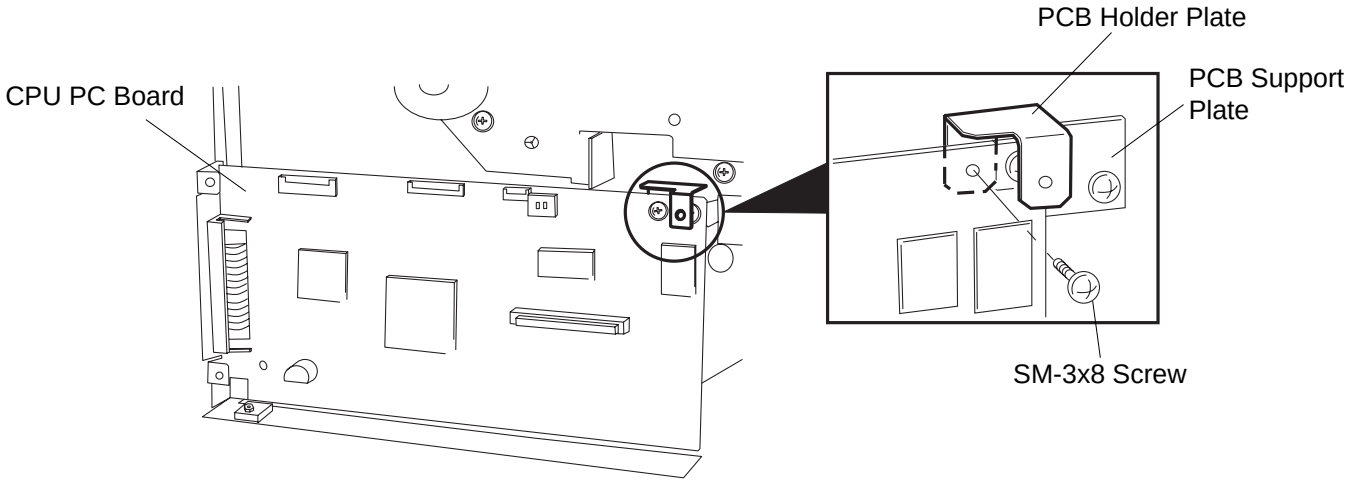


Fig. 3-9

7) Connect the CN51 on the PCMCIA PC board to the CN9 on the CPU PC board.
8) Fix the PCMCIA PC board with the three SM-3x8 screws on the CPU PC board and the PCB holder plate.

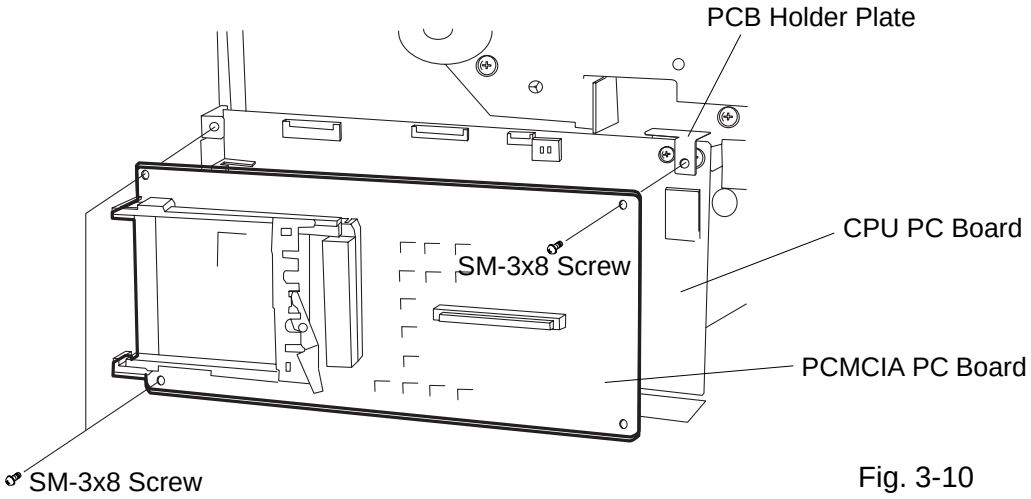


Fig. 3-10

9) Return the three harnesses to CN2, CN5, CN7 on the CPU PC board.
10) Attach the ferrite core to any cable attached to a PCMCIA PC board (Example LAN card) that may be inserted into the card slot. Place the ferrite core as close to the PCMCIA card as possible.
11) Reassemble the left side cover in the reverse order removal.

4. MECHANISM DESCRIPTION

4.1 CUTTER DRIVE (CUTTER MODE)

The printer supplies DC + 27 V to the cutter motor to rotate it and the clutch counter clockwise. The arm swings like a pendulum and moves the fixed slide cutter up and down to make a cut.

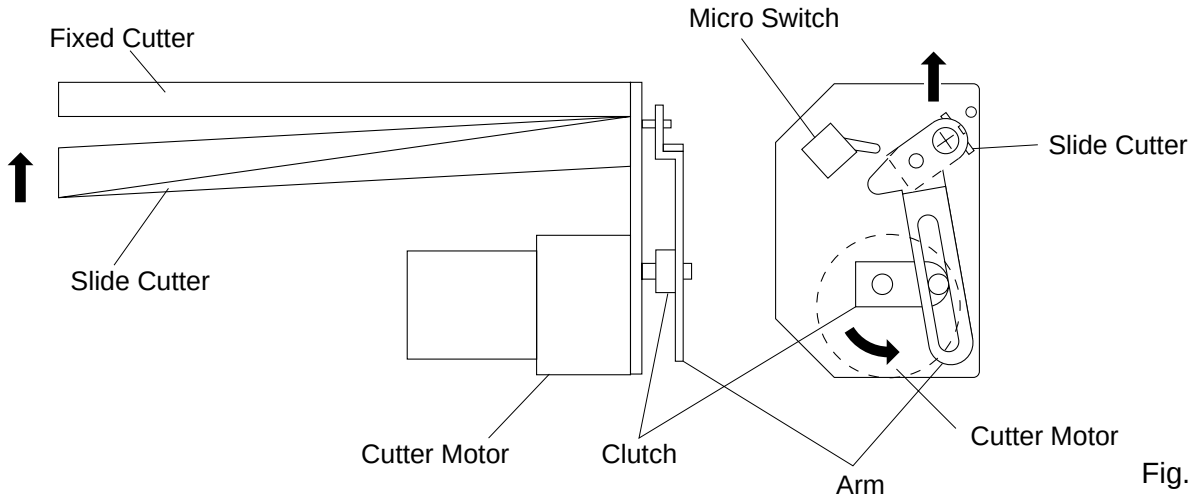


Fig. 4-1

After making a cut, the arm turns the micro switch off and the cutter home position is detected. When the cutter does not return to the home position because of a paper jam, an error occurs and the next piece of paper will not be cut.

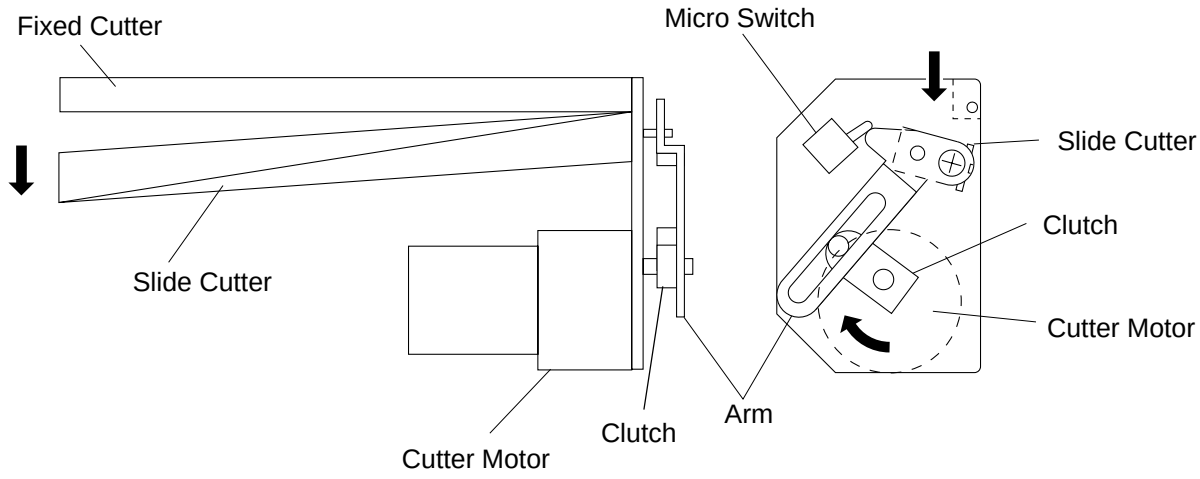
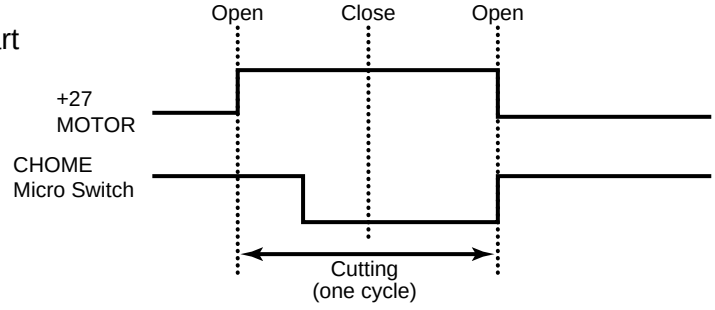


Fig. 4-2

Timing chart



5. TROUBLESHOOTING

Problems	Cause	Solution
Power does not turn ON.	1. Input voltage to the printer is not within the rated voltage. (Check by CN1 on the PS unit.) 2. Output voltage from the printer is not within the rated voltage. (Check that the voltage between Pin 4 and Pin 6 (GND) of CN1 on the PS unit is 27 V. And check that the voltage between Pin 11 and Pin 6 (GND) is 5 V.) 3. No voltage to the I/O PC board. (Check that the voltage between Pin 1 and Pin 5 (GND) of CN2 on the I/O PC board is 27 V. And check that the voltage between Pin 11 and Pin 10 (GND) is 5 V.) 4. Failure of CPU PC board.	• Replace the power cable orpower inlet. • Replace the PS unit. • Replace the power harness. • Replace the CPU PC board.
LED or LCD does not light.	1. Failure of the LED board/LCD 2. Failure of the LCD/LED harness 3. Failure of the CPU PC board	• Replace the LED board/LCD. • Replace the LCD/LED harness. • Replace the CPU PC board.
Poor printing	1. The print paper is of poor quality. 2. Dirty print head 3. The head lever fastens the print head incompletely.	• Use the media approved by TOSHIBA TEC. • Clean the print head. • Fasten the head lever completely.
Printer does not print	1. Print head failure 2. Connection of the print head connector is incomplete,a bad contact, or broken wires. 3. Failure in rewinding/feeding of the ribbon. 4. Failure of the CPU PC board 5. Failure of the software 6. Failure of the printer cable	• Replace the print head. • Connect the harness completely, or replace the harness. • Replace the ribbon rewind motor, ribbon feed motor or I/O PC board. • Replace the CPU PC board. • Check the program. • Replace the printer cable.
Dot missing	1. Broken print head element 2. Broken print head cable wires 3. Failure of the CPU PC board 4. Failure of the I/O PC board.	• Replace the print head. • Replace the print head harness. • Replace the CPU PC board. • Replace the I/O PC board.

Problems	Cause	Solution
Blurred print	1. Poor media quality. 2. Dust is on the media.	• Use only TOSHIBA TEC specified media. • Clean the print head and remove any dust from the media.
Ribbon wrinkle	1. Poor ribbon quality 2. Ribbon is not rewound or fed smoothly.	• Use only TOSHIBA TEC specified ribbon. • Replace the ribbon rewind mo tor or ribbon feed motor.
Ribbon end error	1. Poor ribbon quality 2. Improper voltage applied to the ribbon end sensor 3. Failure of the ribbon end sensor 4. Failure of the circuit which controls the ribbon end sensor.	• Use only TOSHIBA TEC specified ribbon. • Refer to page 2-13 to adjust the ribbon end sensor. • Replace the ribbon end sensor. • Replace the I/O PC board.
Label feed failure	1. Paper is not set properly. 2. Paper of poor quality 3. Improper adjustment of the feed gap sensor or black mark sensor. 4. The proper media sensor is not selected. 5. Threshold is improper. 6. Failure of the feed gap sensor or black mark sensor 7. Labels cannot be stripped off the backing paper or the backing paper with labels cannot be wound properly. 8. The cutter mechanism is not installed properly. 9. Failure of the stepping motor	• Set the paper properly. • Use paper approved by TOSHIBA TEC. • Re-adjust the sensor. • Select the media sensor by DIP switch and adjust the sensitivity of the sensor. (Refer to page 6-40, 41) • Set the threshold. (Refer to Owner's Manual.) • Replace the feed gap sensor or black mark sensor. • Replace the take-up motor or I/O PC board. • Install the cutter mechanism properly. • Replace the stepping motor or I/O PC board.
Communication error	1. Failure of the communication cable 2. Failure of the RS-232C connecter 3. Failure of the communication connector 4. Failure of the PC or application software 5. Failure of the CPU PC board	• Replace the cable. • Replace the connector. • Replace the connector. • Modify the program. • Replace IC2 (MC145407). If the trouble is not solved, replace the CPU PC board.

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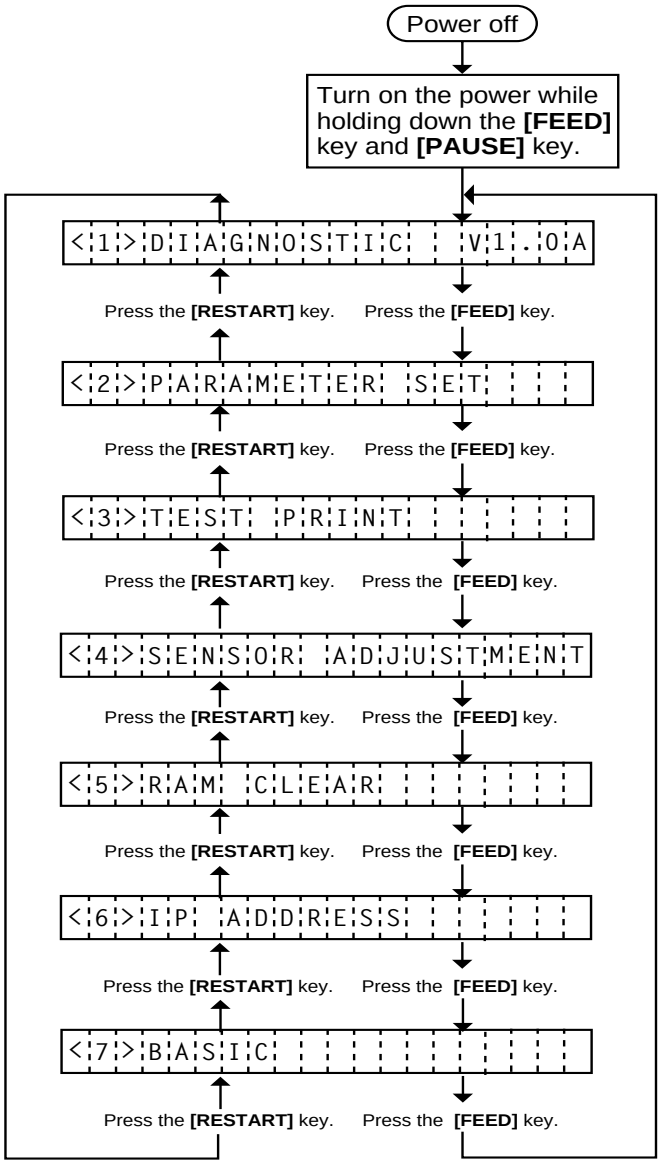
6. DIAG. TEST OPERATION

6.1 OUTLINE OF THE DIAG. TEST OPERATION

In system mode the diag. test operation is used to diagnose the printer and to set the parameters by using the **[FEED]**, **[RESTART]** and **[PAUSE]** keys on the operation panel. Diag. test operation (Type I) is started from the power off state and the parameter setting (Type II) is started while the printer is on-line or printing. For further details, please refer to the corresponding pages.

NOTE: *Every size in this manual is written in millimeter. To obtain the size in inch, divide by 25.4.*

■ Type I



■ Self Test Mode (See page 6-3)

Data from the maintenance counter and automatic diagnosis are printed on the media.

■ Parameter Setting Mode (See page 6-15)

Fine adjustment of the feed length, cut/strip position, back feed length, X axis, print tone, thresholds of the black mark sensor and feed gap sensor, ribbon motor drive voltage, and selection of character code, font zero, baud rate, data length, stop bit, parity, transmission control mode, language of LCD message, auto forward wait and head up ON/OFF in cut mode, ribbon saving module, control code, ribbon type, strip wait status, feed key function, kanji code, EURO font cod, Centronics I/F ACK/BUSY timing, Web printer, and auto print head broken element check are available in this mode.

■ Test Print Mode (See page 6-54)

Print condition and test print type (slant line, characters and bar code) are selectable.

■ Sensor Setting Mode (See page 6-62)

A thermistor check and the adjustment of the black mark and feed gap sensors are available in this mode.

A transmission check is made to both a print head thermistor and an environmental temperature thermistor.

■ RAM Clear Mode (See page 6-67)

Data from the maintenance counter is cleared and parameter setting is initialized in the RAM clear mode.

■ IP Address Setting Mode (See page 6-72)

Host IP address, Printer IP address, and Gateway IP address settings are available in this mode.

■ BASIC Setting Mode (See page 6-74)

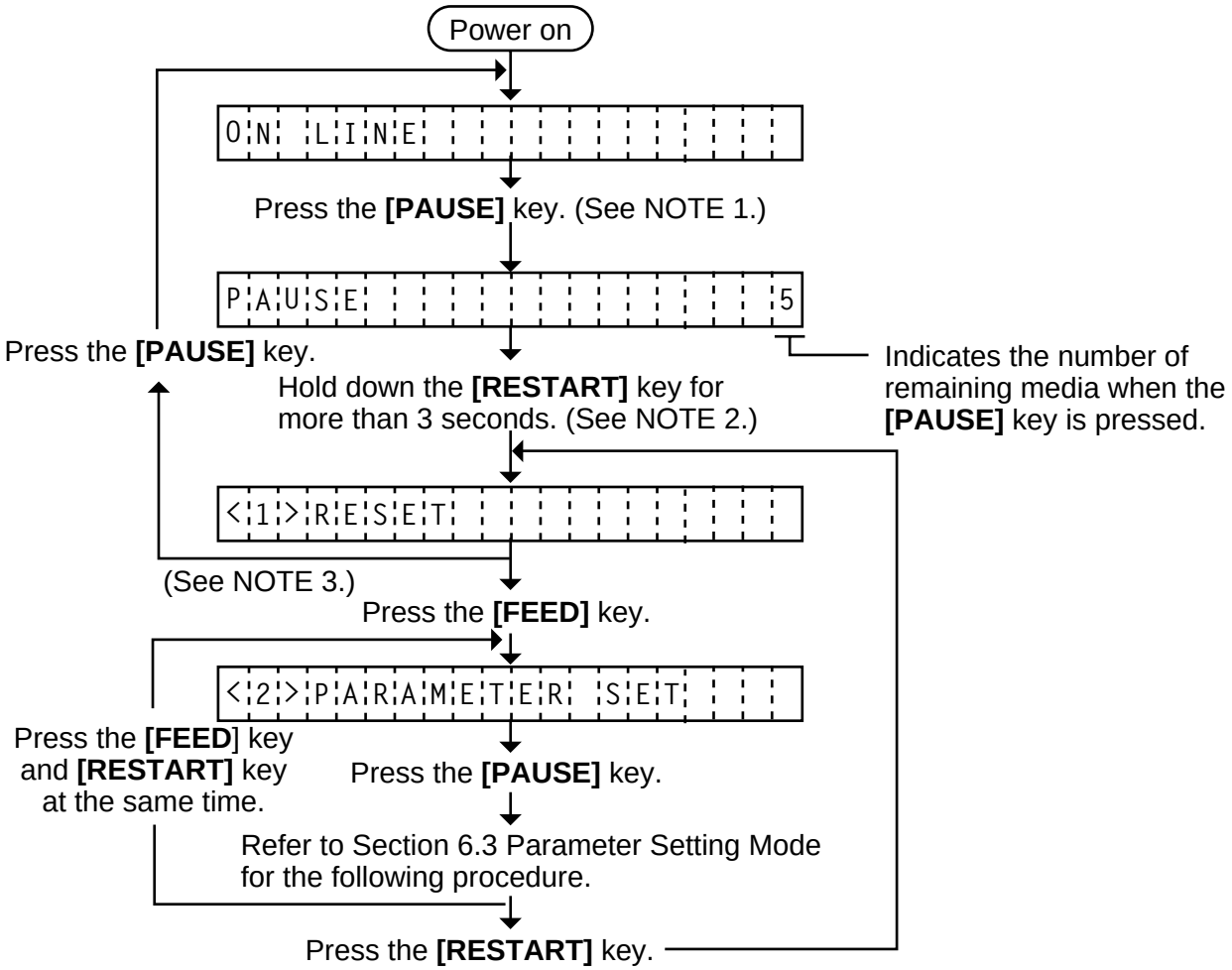
Setting the BASIC specification and trace specification to be enabled/disabled, and displaying the program file/data file are available in this mode.

In system mode the **[FEED]**, **[RESTART]** and **[PAUSE]** keys function as described below.

Key Name	Function
[FEED] key	Used to start the system mode as a **[PAUSE]** key does. Used to select the parameter mode or to fine adjust the parameters in the negative direction (-).
[RESTART] key	Used to select the parameter mode or to fine adjust the parameters in the positive direction (+)
[PAUSE] key	Used to start the system mode as a **[FEED]** key does and to select the parameter mode. Used as an enter key.

■ Type II

The parameter setting such as feed length fine adjustment or cut/strip position fine adjustment can be changed while the printer is on-line or printing. Pressing the **[PAUSE]** key causes the printer to enter parameter setting mode. Reset mode is provided for this procedure to cancel the steps which follow the **[PAUSE]** key without turning the power off.


Power on
ON LINE
Press the [PAUSE] key. (See NOTE 1.)
PAUSE 5
Press the [PAUSE] key.
Indicates the number of remaining media when the [PAUSE] key is pressed.
Hold down the [RESTART] key for more than 3 seconds. (See NOTE 2.)
<1>RESET
(See NOTE 3.)
Press the [FEED] key.
<2>PARAMETER SET
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Refer to Section 6.3 Parameter Setting Mode for the following procedure.
Press the [RESTART] key.

NOTES:

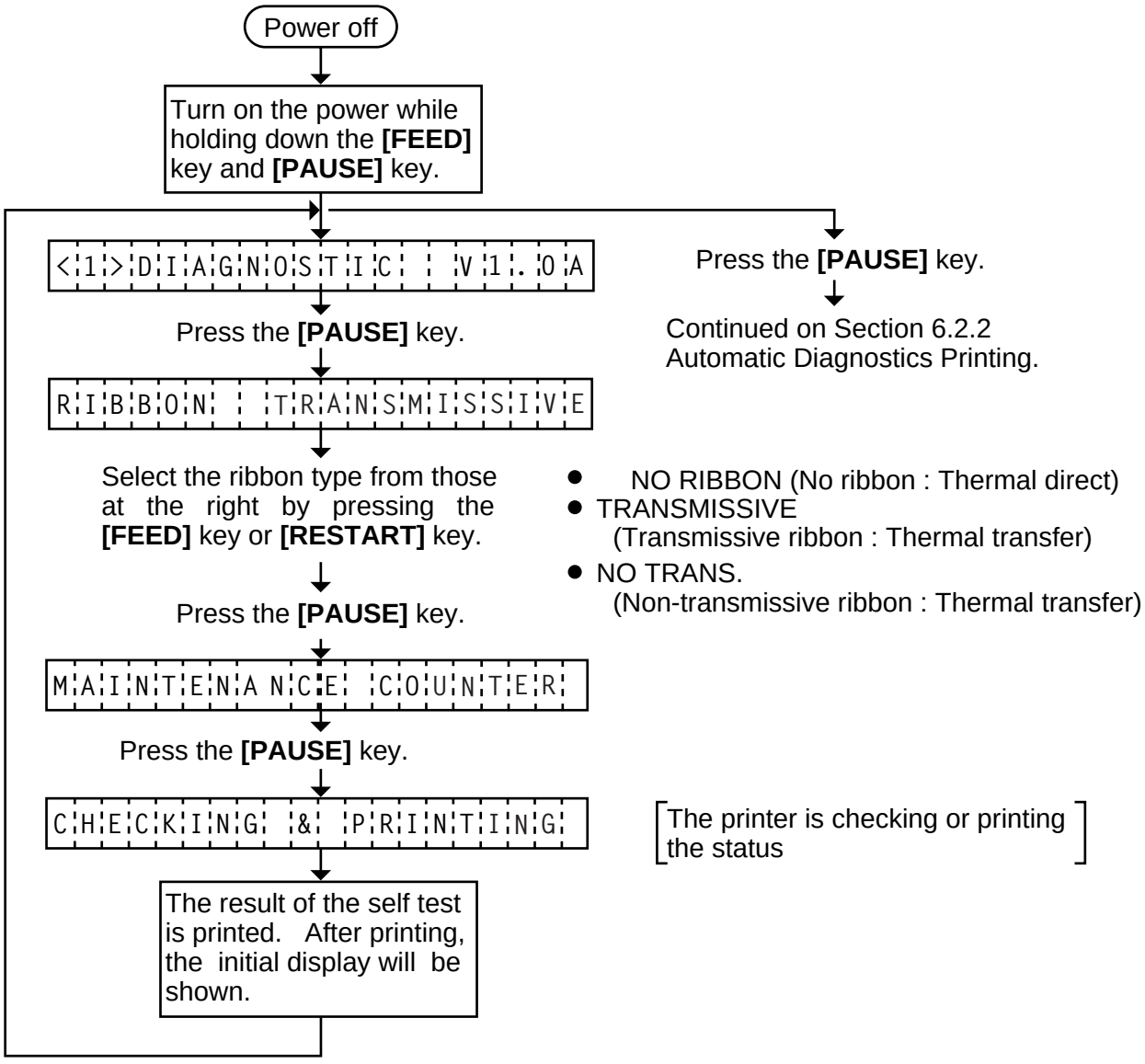
1. *Pressing the **[PAUSE]** key during printing causes the printer to pause printing and show the number of remaining media.*
2. *If the **[RESTART]** key is released within 3 seconds, the printer will resume printing because the **[RESTART]** key is activated.*
3. *Since the reset is performed when terminating this mode, the printer cancels the remaining media and returns to on-line mode. This reset will not clear the changed parameter settings.*

6.2 SELF TEST MODE

In self test mode the printer status is printed in two types of sample print.

6.2.1 Maintenance Counter Printing

The data from 1 to 53 on a sample print is printed. This data is the printer status and the value set in the parameter setting mode.


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAG. V1.0A
Press the [PAUSE] key.
Continued on Section 6.2.2 Automatic Diagnostics Printing.
RIBBON TRANSMISSIVE
Select the ribbon type from those at the right by pressing the [FEED] key or [RESTART] key.
NO RIBBON (No ribbon : Thermal direct)
TRANSMISSIVE (Transmissive ribbon : Thermal transfer)
NO TRANS. (Non-transmissive ribbon : Thermal transfer)
Press the [PAUSE] key.
MAINTENANCE COUNTER
Press the [PAUSE] key.
CHECKING & PRINTING
The printer is checking or printing the status
The result of the self test is printed. After printing, the initial display will be shown.

NOTES: *1. If the maintenance counter printing results in an error, the printer will display the error message and stop printing. The error status can be cleared by the **[PAUSE]** key, however, the display will return to the initial display "<1> DIAG. V1.0A". Printing is not automatically resumed after the error is cleared.*

2. Both label and tag paper can be used for printing.

■ Sample Print

[Print Condition]

- Preset count : 1
- Print speed : 4"/sec.
- Sensor : No sensor
- Printing method : Thermal transfer
- Supply length : 140 mm
- Issuing mode : Batch printing (without rewinder)

(1)	TL FEED	1.1 km	[PC]		
(2)	FEED	1.1 km	FEED	+2.0 mm	(43)
(3)	PRINT	0.5 km	CUT	+0.0 mm	(44)
(4)	CUT	96	BACK	+0.0 mm	(45)
(5)	HEAD U/D	32	TONE (T)	+0 step	(46)
(6)	RIBBON	3 h	TONE (D)	+0 step	(47)
(7)	SOLENOID	0 h	RBN (FW)	-10	(48)
			RBN (BK)	+0	(49)
(8)	232C ERR	255	[KEY]		
(9)	SYS ERR	0	FEED	+0.0 mm	(50)
(10)	PW FAIL	0	CUT	+1.0 mm	(51)
			BACK	+0.0 mm	(52)
(11)	THRESHOLD (R)	1.0 V	TONE (T)	+0 step	(53)
(12)	THRESHOLD (T)	0.7 V	TONE (D)	+0 step	(54)
			RBN (FW)	-8	(55)
(13)	FONT [PC-850]	[0]	RBN (BK)	+0	(56)
(14)	CODE [AUTO]		X ADJ.	+0.0 mm	(57)
(15)	RIBBON	[TRANS]			
(16)	STATUS	[ON]			
(17)	SPEED	[9600]			
(18)	DATA LENG.	[8]			
(19)	STOP BIT	[1]			
(20)	PARITY	[EVEN]			
(21)	CONTROL	[XON+READY AUTO]			
(22)	MESSAGE	[ENGLISH]			
(23)	FORWARD WAIT	[OFF]			
(24)	HEAD UP CUT	[OFF]			
(25)	RIBBON SAVE	[ON]			
(26)	SENS POSI	[CENTER]			
(27)	FEED KEY	[FEED]			
(28)	KANJI	[TYPE1]			
(29)	EURO CODE	[B0]			
(30)	AUTO HD CHK	[OFF]			
(31)	WEB PRINTER	[OFF]			
(32)	HOST IP ADDR	[192.168.010.010]			
(33)	PRTR IP ADDR	[192.168.010.020]			
(34)	GATE IP ADDR	[000.000.000.000]			
(35)	SUBNET MASK	[255.255.255.000]			
(36)	TTF AREA	[704 KB]			
(37)	EXT CHR AREA	[128 KB]			
(38)	BASIC AREA	[64 KB]			
(39)	PC SAVE AREA	[64 KB]			
(40)	SOCKET PORT	[ON] [08000]			
(41)	BASIC	[OFF]			
(42)	BASIC TRACE	[OFF]			

Fig. 6-1

1) Maintenance Counter

#	Item	Count Condition	Range
(1)	Total media distance covered	Counted when the feed motor drives to feed, print and issue the media. (Counted also during ribbon save operation and back feed.) [See NOTE 2.]	0.0 to 3200.0 km
(2)	Media distance covered		0.0 to 200.0 km
(3)	Print distance	Counted while printing. (Feeding and issuing media, and ribbon saving operation are not counted.) [See NOTE 2.]	0.0 to 200.0 km
(4)	Cut count	Counts every cut. [See NOTE 3.]	0 to 1000000 times
(5)	Head up and down count	Counts every up and down of the print head using the solenoid for ribbon save operation. (Up+Down=1 count) [See NOTE 3.]	0 to 2000000 times
(6)	Ribbon motor driving time	Counts when the ribbon motor drives to feed, print and issue the media. (The driving time is not counted during ribbon saving operation, but is during back feed.) [See NOTE 4.]	0 to 2000 hours
(7)	Solenoid driving time	Counted during ribbon saving operation. [See NOTE 4.]	0 to 1000 hours
(8)	RS-232C hardware error count	Counted when a parity, overrun or framing error occurs. [See NOTE 5.]	0 to 255 times
(9)	System error count	Counted when a zero-dividing error occurs or undefined command is retrieved.	0 to 15 times
(10)	Momentary power failure count	Counts the number of times the power restores while the CPU is busy after reset.	0 to 15 times

NOTES: *1. Item from (2) through (10) are initialized to "0" after RAM clear.*

2. If the distance is 5.5 m or less, it is rounded down and no data is added to the memory at power off.

3. If the count is 31 counts or less, it is rounded down and no data is added to the memory at power off.

4. If the driving time is 27 sec. or less, it is rounded down and no data is added to the memory at power off.

5. When a sent command results in an error, the same number as the data capacity of the command is counted by byte.

2) Parameters

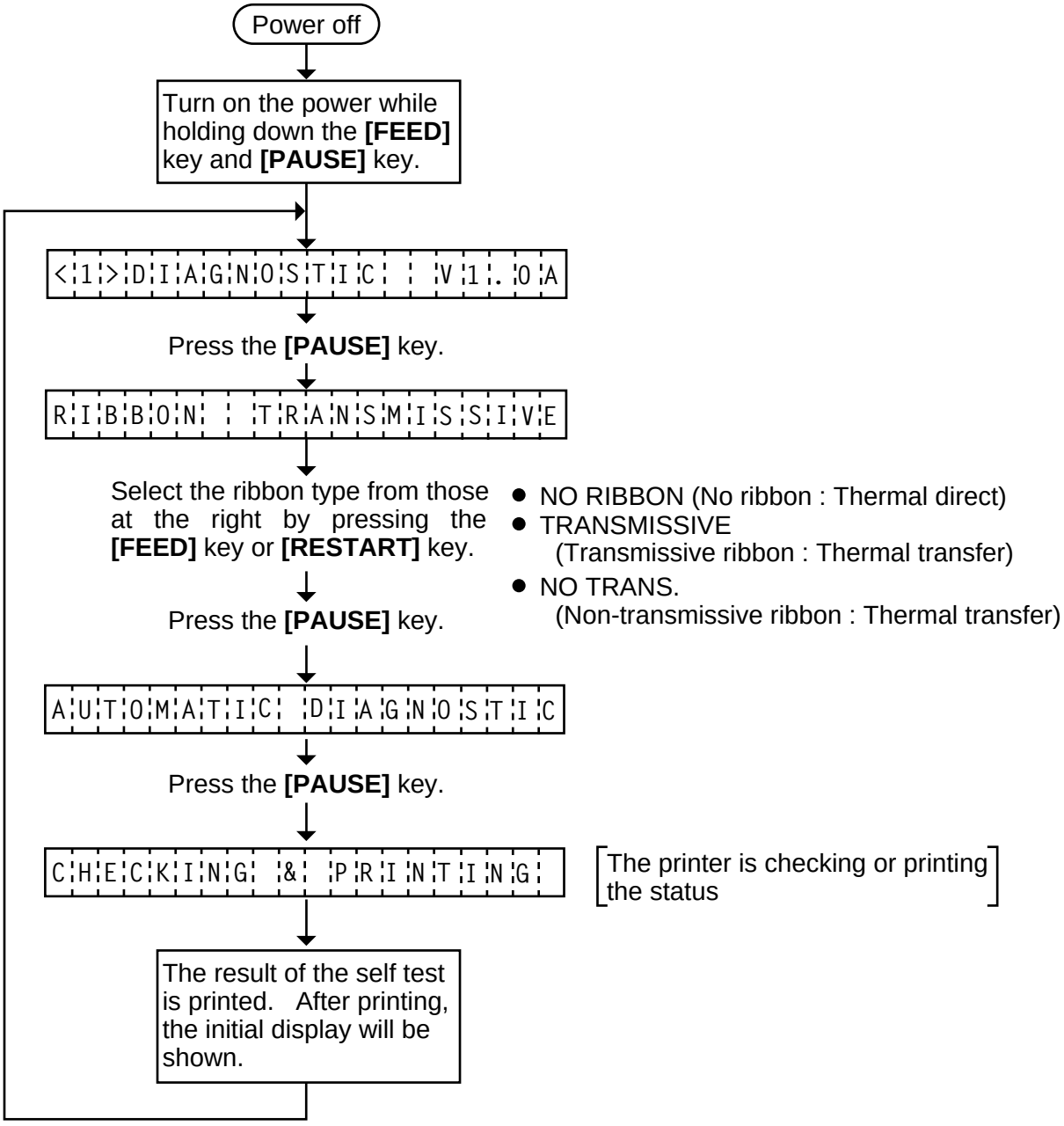
#	Item	Contents
(11)	Threshold manual fine adjustment for the black mark sensor	0.0V to 4.0V
(12)	Threshold manual fine adjustment for the feed gap sensor	0.0V to 4.0V
(13)	Character	PC-850: PC-851 PC-1252 LATIN9 PC-852: PC-855 PC-1253 Arabic PC-857: PC-1250 PC-1254 PC-8: PC-1251 PC-1257
	Font zero	0: No slash used. Ø: Slash used.
(14)	Control code	AUTO: Automatic selection ESC LF NUL: ESC LF NUL mode { l }: Mainframe mode 1B 1C 1D: Manual
(15)	Ribbon type	TRANS.: Transmissive ribbon NON TRANS.: Non-transmissive ribbon

#	Item	Contents
(16)	Status	1: Strip wait status is not sent to the PC. 2: Strip wait status is sent to the PC.
(17)	Baud rate	2400: 2400 bps 4800: 4800 bps 9600: 9600 bps 19200: 19200 bps 38400: 38400 bps
(18)	Data length	7: 7 bits 8: 8 bits
(19)	Stop bit	1: 1 bit 2: 2 bits
(20)	Parity	NONE: None ODD: ODD EVEN: EVEN
(21)	Transmission control code	XON/XOFF: XON/XOFF READY/BUSY: READY/BUSY (DTR) XON+READY AUTO: XON/XOFF+READY/BUSY (DTR) XON/XOFF AUTO: XON/XOFF READY/BUSY RTS: RTS
(22)	Language selection for LCD message	ENGLISH:English GERMAN:German FRENCH: French DUTCH: Dutch SPANISH:Spanish JAPANESE: Japanese ITALIAN: Italian
(23)	Auto forward wait in cut mode	ON: Available OFF: Unavailable
(24)	Head up in cut mode	ON: Available OFF: Unavailable
(25)	Ribbon saving module	ON: Available OFF: Unavailable
(26)	Sensor Position	CENTER: Fixed Type Sensor EDGE: Movable Type Sensor
(27)	Feed key function	FEED: feeds one label PRINT: prints image buffer on one label
(28)	Kanji code type (Not supported QQ/QP models)	TYPE 1: Windows code TYPE 2: Original code
(29)	Euro font code	20H to FFH
(30)	Auto print head broken element check	ON: Available OFF: Unavailable
(31)	Web printer function	ON: Available OFF: Unavailable
(32)	Host IP address	***.***.***.***
(33)	Printer IP address	***.***.***.***
(34)	Gateway IP address	***.***.***.***
(35)	Subnet mask	***.***.***.***
(36)	True type font registration area size	0 KB to 896 KB (units of 64 KB)
(37)	External character registration area size	0 KB to 896 KB (units of 64 KB)
(38)	BASIC file store area size	0 KB to 896 KB (units of 64 KB)
(39)	PC saving area size	0 KB to 896 KB (units of 64 KB)

#	Item	Contents
(40)	Socket port number	ON: Available OFF: Unavailable Port No. 0 to 65535
(41)	BASIC interpreter setting	ON: Available OFF: Unavailable
(42)	BASIC interpreter trace setting	ON: Available OFF: Unavailable
(43) (50)	Feed length fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm
(44) (51)	Cut/Strip position fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm
(45) (52)	Back feed length fine adjustment (PC), (KEY)	-9.5 mm to +9.5 mm
(46) (53)	Print tone fine adjustment (Thermal transfer) (PC), (KEY)	-10 step to +10 step
(47) (54)	Print tone fine adjustment (Thermal direct) (PC), (KEY)	-10 step to +10 step
(48) (55)	Ribbon take-up motor driving voltage fine adjustment (PC), (KEY)	-15 step to +0 step
(49) (56)	Ribbon feed motor driving voltage fine adjustment (PC), (KEY)	-15 step to +10 step
(57)	X axis fine adjustment	-99.5 mm to +99.5 mm

6.2.2 Automatic Diagnostic Printing

The data from ① to ⑩ on a sample print is printed.


Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAG. V1.0A
Press the **[PAUSE]** key.
RIBBON TRANSMISSIVE
Select the ribbon type from those at the right by pressing the **[FEED]** key or **[RESTART]** key.
● NO RIBBON (No ribbon : Thermal direct)
● TRANSMISSIVE (Transmissive ribbon : Thermal transfer)
● NO TRANS. (Non-transmissive ribbon : Thermal transfer)
Press the **[PAUSE]** key.
AUTOMATIC DIAGNOSTIC
Press the **[PAUSE]** key.
CHECKING & PRINTING
[The printer is checking or printing the status]
The result of the self test is printed. After printing, the initial display will be shown.

NOTES: *1. If the automatic diagnosis printing results in an error, the printer will display the error message and stop printing. The error status can be cleared by the **[PAUSE]** key, however, the display will return to the initial display "<1> DIAG. V1.0A". Printing is not automatically resumed.*

2. Both label and tag paper can be used for printing.

■ Sample Print

[Print condition]

- Preset count : 1
- Print speed : 4"/sec.
- Sensor : No sensor
- Printing method : Thermal Transfer
- Supply length : 59 mm
- Issuing mode : Batch printing (without rewinder)

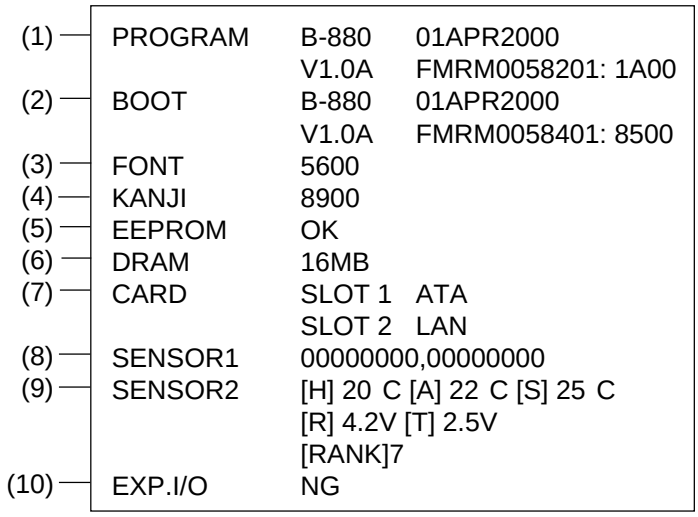
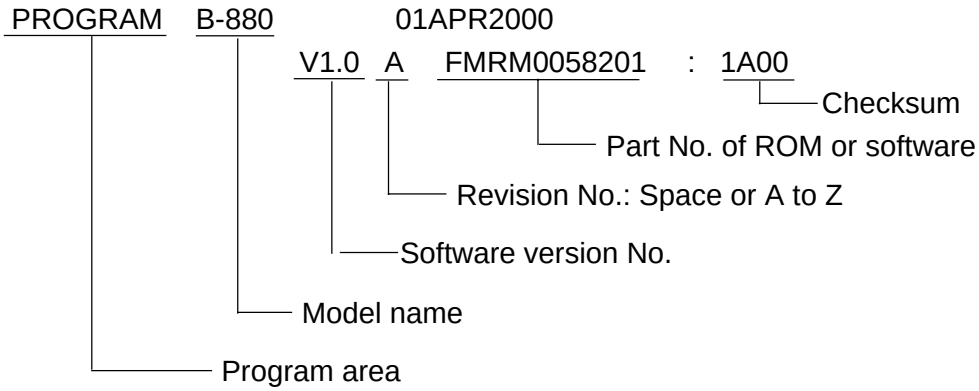


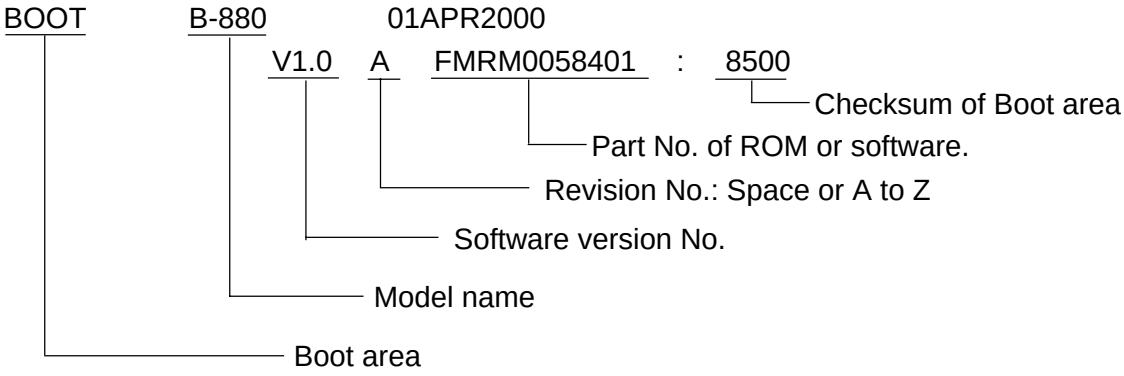
Fig. 6-2

NOTE: *The symbol " " in " C" may not be printed depending on the type of character code.*

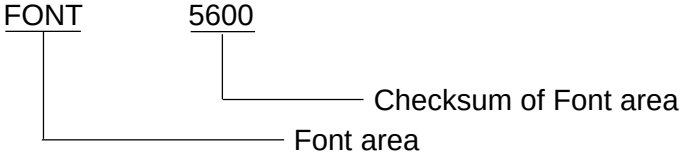
(1) PROGRAM ROM Check



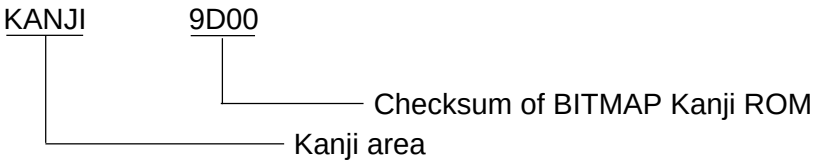
(2) BOOT Check


BOOT B-880 01APR2000
V1.0 A FMRM0058401 : 8500
Checksum of Boot area
Part No. of ROM or software.
Revision No.: Space or A to Z
Software version No.
Model name
Boot area

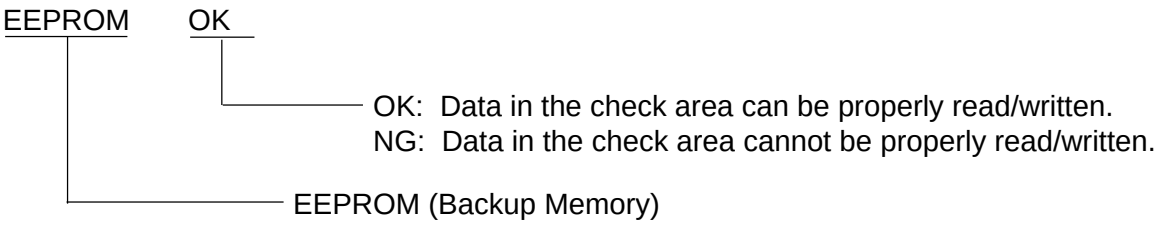
(3) Font Check



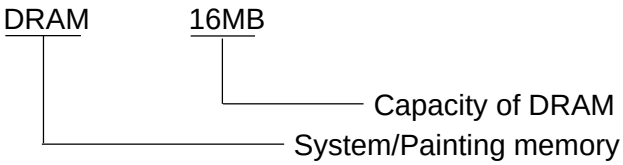
(4) Kanji Check



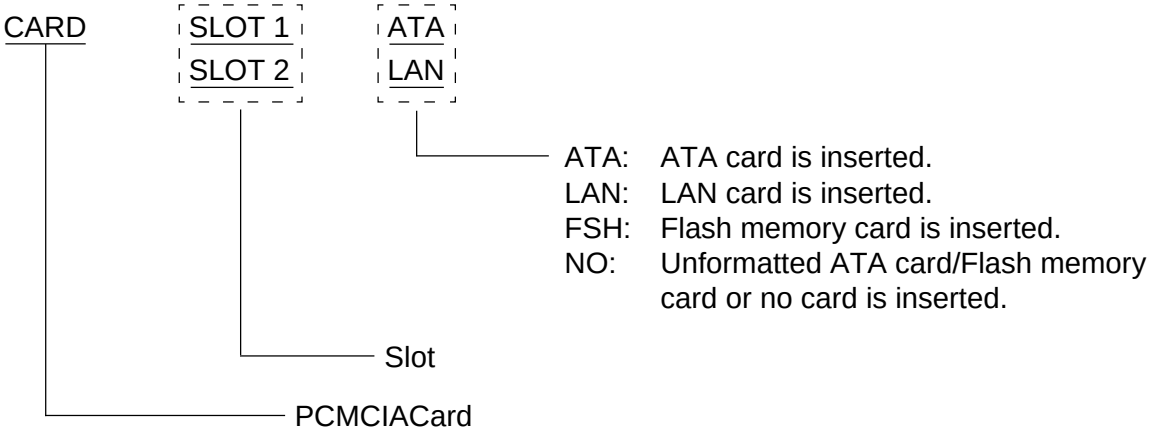
(5) EEPROM Check


EEPROM
OK
OK: Data in the check area can be properly read/written.
NG: Data in the check area cannot be properly read/written.
EEPROM (Backup Memory)

(6) DRAM Check

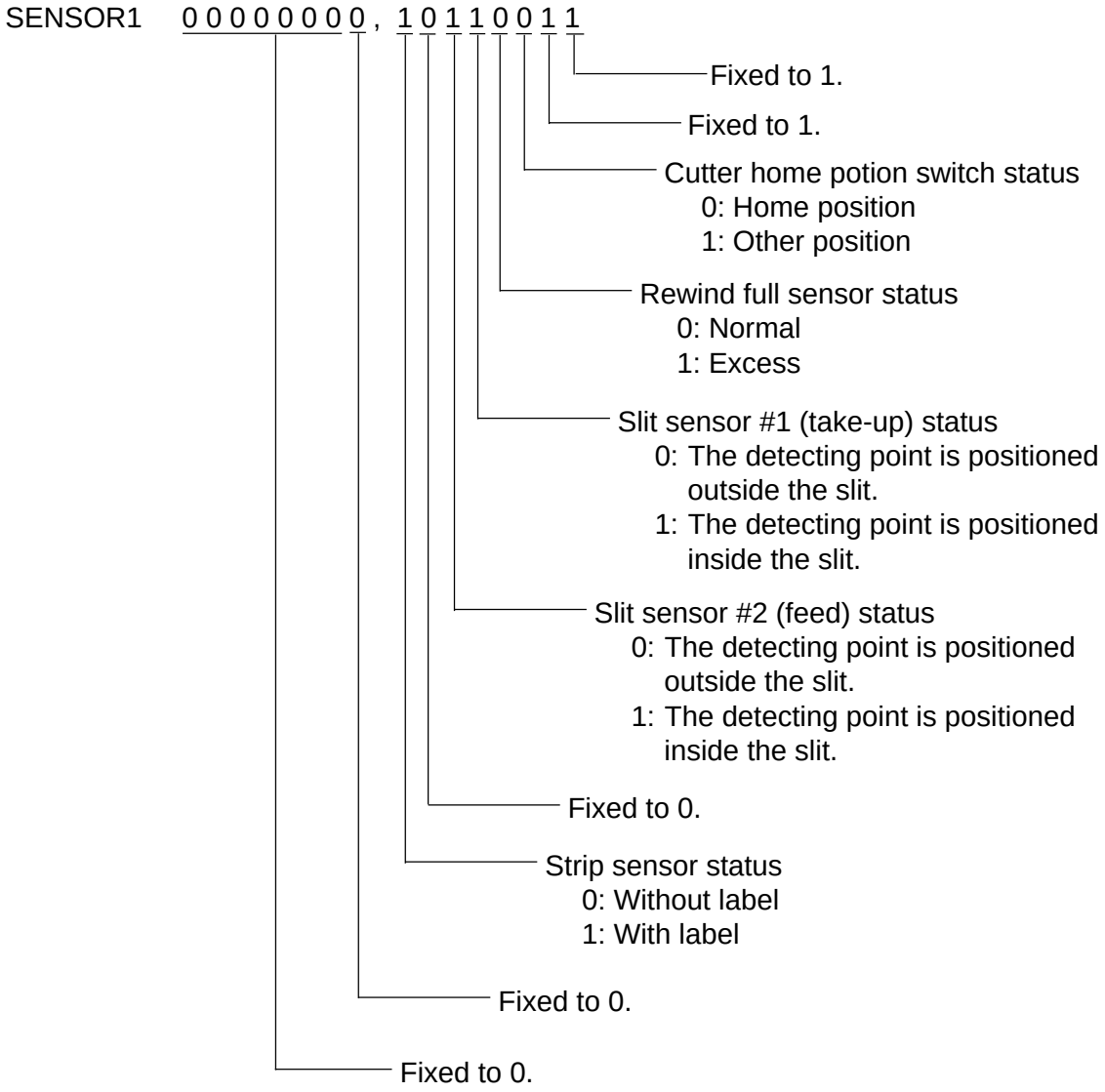


(7) PC card Check



NOTES:
1. *Software version No., part No. of ROM and checksum vary according to the software version of PROGRAM ROM.*
2. *The last two digits of the checksum are usually 0.*
3. *When the kanji ROM is not installed, the checksum becomes "0000"*
4. *When selecting the Diag. Test operation, pressing the **[RESTART]** and **[FEED]** keys at the same time restores the display to the system mode menu.*

(8) Sensor 1 Check


SENSOR1 0 0 0 0 0 0 0 0 , 1 0 1 1 0 0 1 1
Fixed to 1.
Fixed to 1.
Cutter home potion switch status
0: Home position
1: Other position
Rewind full sensor status
0: Normal
1: Excess
Slit sensor #1 (take-up) status
0: The detecting point is positioned outside the slit.
1: The detecting point is positioned inside the slit.
Slit sensor #2 (feed) status
0: The detecting point is positioned outside the slit.
1: The detecting point is positioned inside the slit.
Fixed to 0.
Strip sensor status
0: Without label
1: With label
Fixed to 0.
Fixed to 0.

■ Print status content description of each sensor/switch

Sensor/Switch	Print status content description
Cutter home position switch	Indicates whether the cutter is at the home position or not.
Rewind full sensor	Indicates whether the media is wound to peak capacity on the built-in take-up spool or not.
Slit sensor #1 (take-up) Slit sensor #2 (feed)	Controls ribbon motor rotation by detecting the slit on the ribbon take-up motor and the ribbon feed motor. Indicates the position of the slit sensor.
Strip sensor	Indicates the existence of label in strip mode. When no label is detected (0), the subsequent label is issued, when a label is detected (1), the subsequent label will not be issued until the current label is removed.

(9) SENSOR 2 Check

SENSOR2 [H] 20 C [A] 22 C [S] 25 C

- [S] 25 C: Heat sink temperature sensor status: 25 C, 80 C, 90 C
- [A] 22 C: Environmental temperature thermistor status: 0 to 86 C. If it is undetectable, "- - C" is printed.
- [H] 20 C: Print head thermistor status: 0 ~ 86 C

[R] 4.2V [T] 2.5V

- [T] 2.5V: Feed gap sensor status: 0.0 ~ 5.0V
- [R] 4.2V: Black mark sensor status: 0.0 ~ 5.0 V

[RANK 7]

- [RANK 7]: Print head resistance rank: 0 ~ 15

Print Head Resistance Rank

Resistance Rank	Average resistance (ohm)
0	1432 - 1454
1	1409 - 1431
2	1385 - 1408
3	1361 - 1384
4	1337 - 1360
5	1314 - 1336
6	1290 - 1313
7	1266 - 1289
8	1242 - 1265
9	1219 - 1241
10	1195 - 1218
11	1171 - 1194
12	1147 - 1170
13	1124 - 1146
14	1100 - 1123
15	1076 - 1099

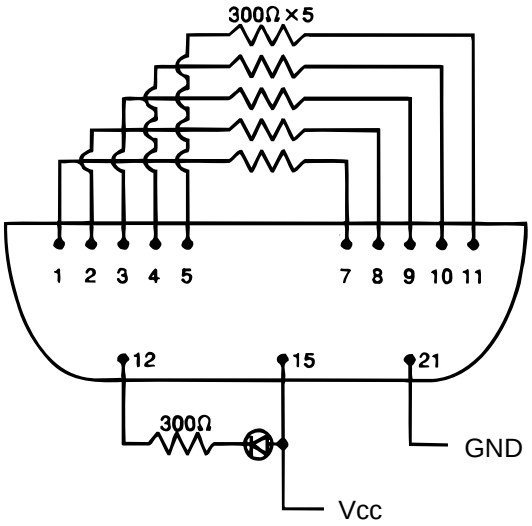
(10)EXP. I/O Check

EXP. I/O OK

Loopback test
OK: The circuit has no problem.
NG: The circuit has a problem or loopback jig is not attached.

Expansion I/O PC board

For the loopback test, connect a jig as shown below and check HIGH output / HIGH input and LOW output / LOW input.

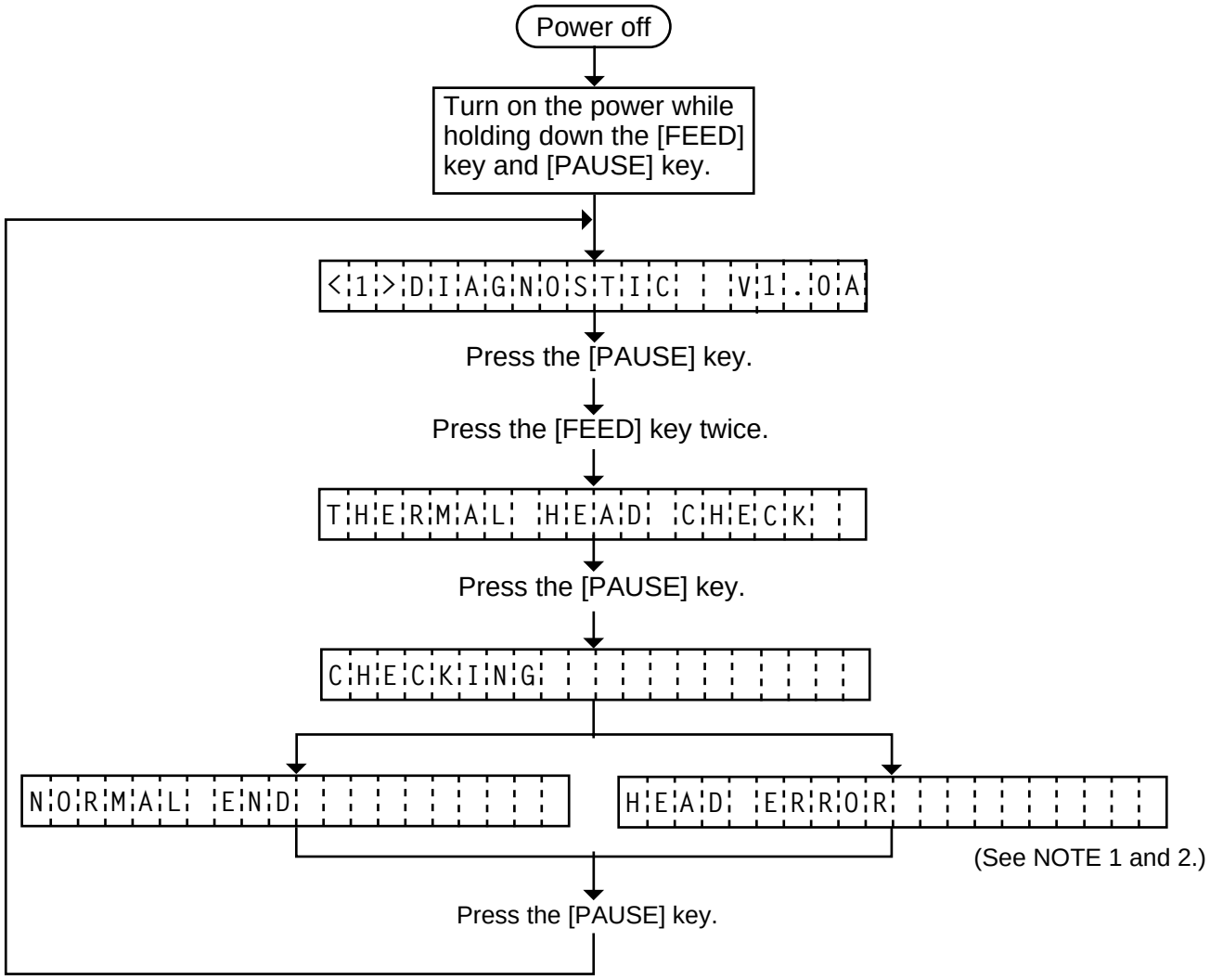


Connector: FCN-781P024-G/P

Fig. 6-3

6.2.3 Head Broken Element Check

The printer automatically performs the head broken element check. The result of the head broken element check is indicated in the display.

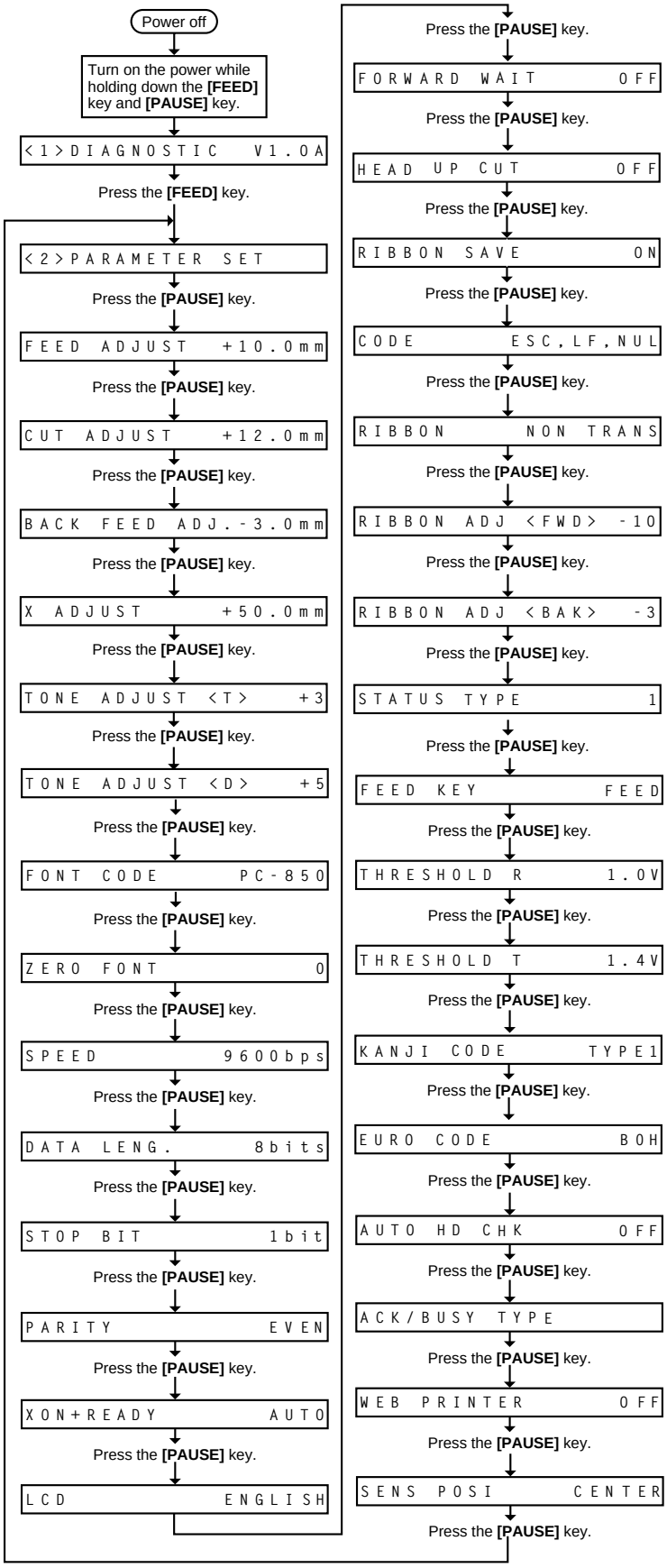


NOTES: *1. If the head broken element check results in 'HEAD ERROR', the print head must be replaced after referring to Section 2.5 Replacing the Print Head.*

2. After replacing the print head, clear the maintenance counter as described in Section 5.6.1 and perform a test print in Section 6.4 TEST PRINT MODE.

6.3 PARAMETER SETTING MODE

The following items are set in the parameter setting mode. The values set in this mode are printed on the sample print of the maintenance counter. Setting procedure and functions are provided below.

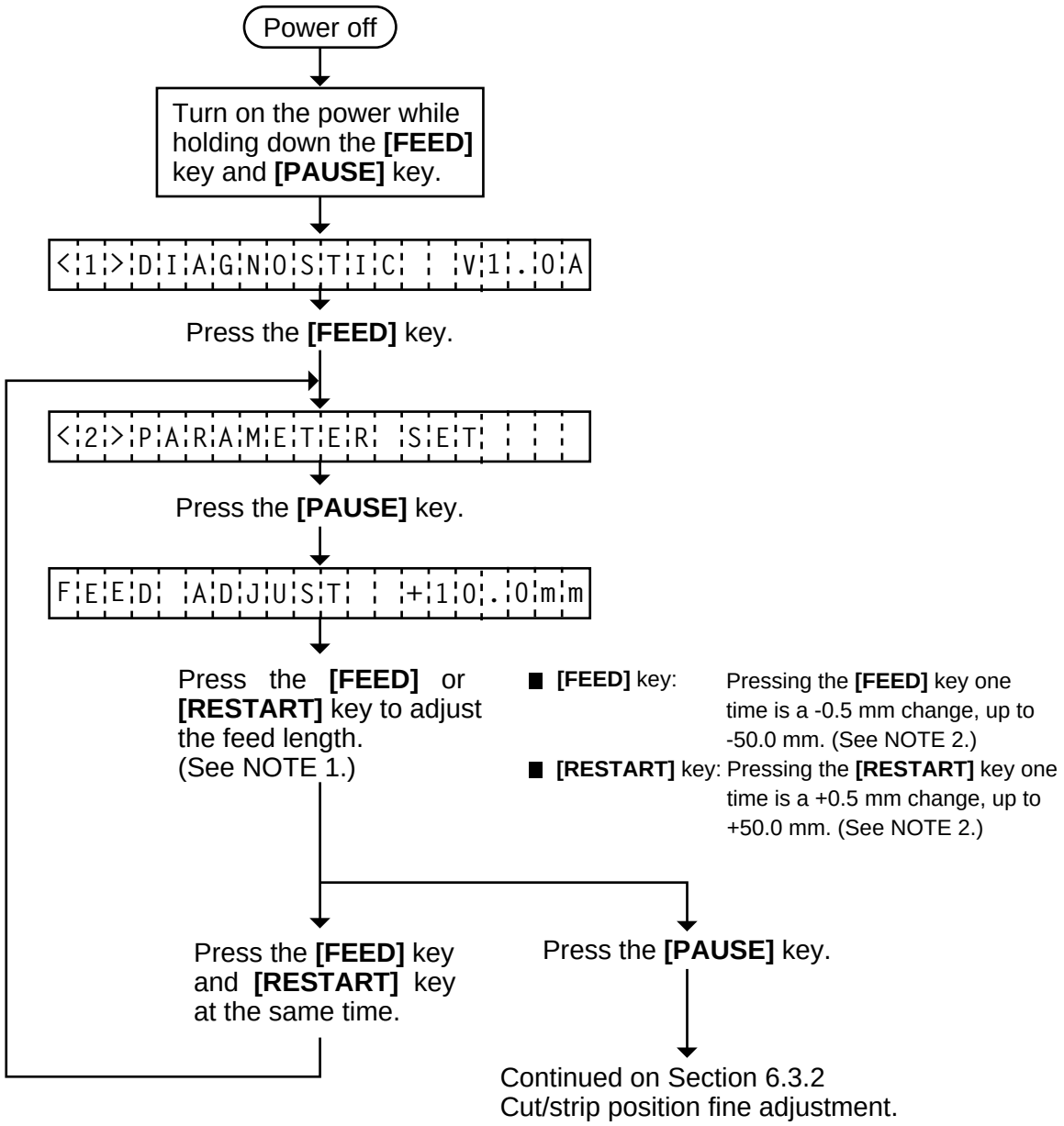


■ Parameter Setting Mode Table

Mode Name	Function
FEED ADJUST	Using this parameter the feed length is fine adjusted.
CUT ADJUST	Using this parameter the cut position or strip position is fine adjusted.
BACK FEED ADJUST	Using this parameter the back feed length from the cut/strip position to the home position is fine adjusted.
X ADJUST	This setting is used to finely adjust print position in the X axis.
TONE ADJ. <T> (Thermal transfer printing) TONE ADJ. <D> (Thermal direct printing)	Using this parameter the print tone is fine adjusted. The longer the print pulse width, the darker the print tone becomes. The shorter, the lighter the print tone becomes.
FONT CODE	The character code either PC-850 or PC-8 is selected.
ZERO FONT	The font zero either 0 or Ø is selected.
SPEED	Baud rate of the serial interface is selected.
DATA LENG.	Data length of the serial interface is selected.
STOP BIT	Stop bit of the serial interface is selected.
PARITY	Parity of the serial interface is selected.
XON+READY	Transmission control mode of the serial interface is selected.
LCD	Language which displays LCD message is selected.
FORWARD WAIT	Auto forward wait in cut mode is selected. When idle for 3 seconds or more after cutting, the printer automatically feeds the paper 10mm forward.
HEAD UP CUT	Print head up in cut mode is selected. If a back feed is performed when this parameter is ON, it is done while the print head is up. (Available only when the ribbon saving module is installed and the ribbon save mode is ON.)
RIBBON SAVE	The ribbon saving module is selected. Be sure to set this parameter to ON when using the ribbon saving module.
CODE	The command code out of AUTO, ESC/LF/NUL, or { I } is selected.
RIBBON	Ribbon type either transmissive or non-transmissive is selected.
RIBBON ADJ <FWD> (Ribbon feed motor) RIBBON ADJ <BAK> (Ribbon feed motor)	Using this parameter the torque of the ribbon motors is fine adjusted.
STATUS TYPE	Whether or not the strip wait status (05H) is sent in response to the status request command from the PC is selectable.
FEED KEY	The **[FEED]** key function is selected. FEED: feeds a piece of paper PRINT: prints image buffer on a piece of paper.
THRESHOLD R	The threshold of the black mark sensor is manually fine adjusted.
THRESHOLD T	The threshold of the feed gap sensor is manually fine adjusted.
KANJI CODE	Kanji code either Windows code or original code is selected. (Not supported by QQ/QP models.)
EURO CODE	EURO code is selected from 20H to FFH.
SENS POSI	The media sensor position is selected. CENTER: Fixed EDGE: Movable

Mode Name	Function
AUTO HD CHK	Auto head broken element check is selected. ON: When the power turns ON, the auto head broken element check is performed. OFF: When the power turns ON, the auto head broken element check is not performed.
ACK/BUSY	Using this parameter sets the Centronics I/F ACK/BUSY timing.
WEB PRINTER	The Web printer is selected.

6.3.1 Feed Length Fine Adjustment


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key.
FEED ADJUST +10.0mm
Press the [FEED] or [RESTART] key to adjust the feed length. (See NOTE 1.)
■ [FEED] key: Pressing the [FEED] key one time is a -0.5 mm change, up to -50.0 mm. (See NOTE 2.)
■ [RESTART] key: Pressing the [RESTART] key one time is a +0.5 mm change, up to +50.0 mm. (See NOTE 2.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.2 Cut/strip position fine adjustment.

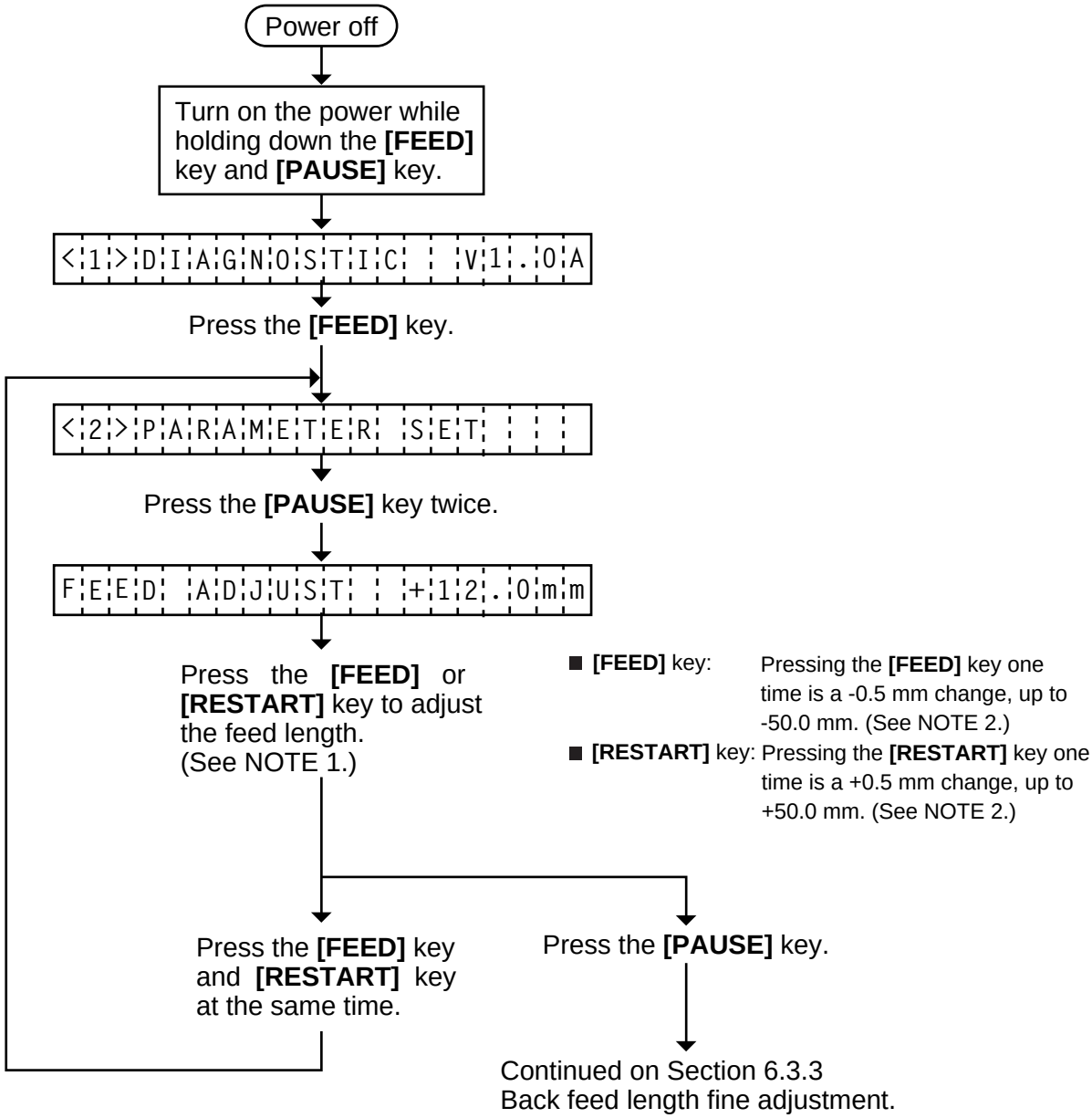
NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

2. Max. fine adjustment –50.0 mm = Key fine adjustment value (–50.0 mm) + PC fine adjustment value (–50.0 mm)

When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

*3. A changed feed value is stored in memory by pressing the **[PAUSE]** key.*

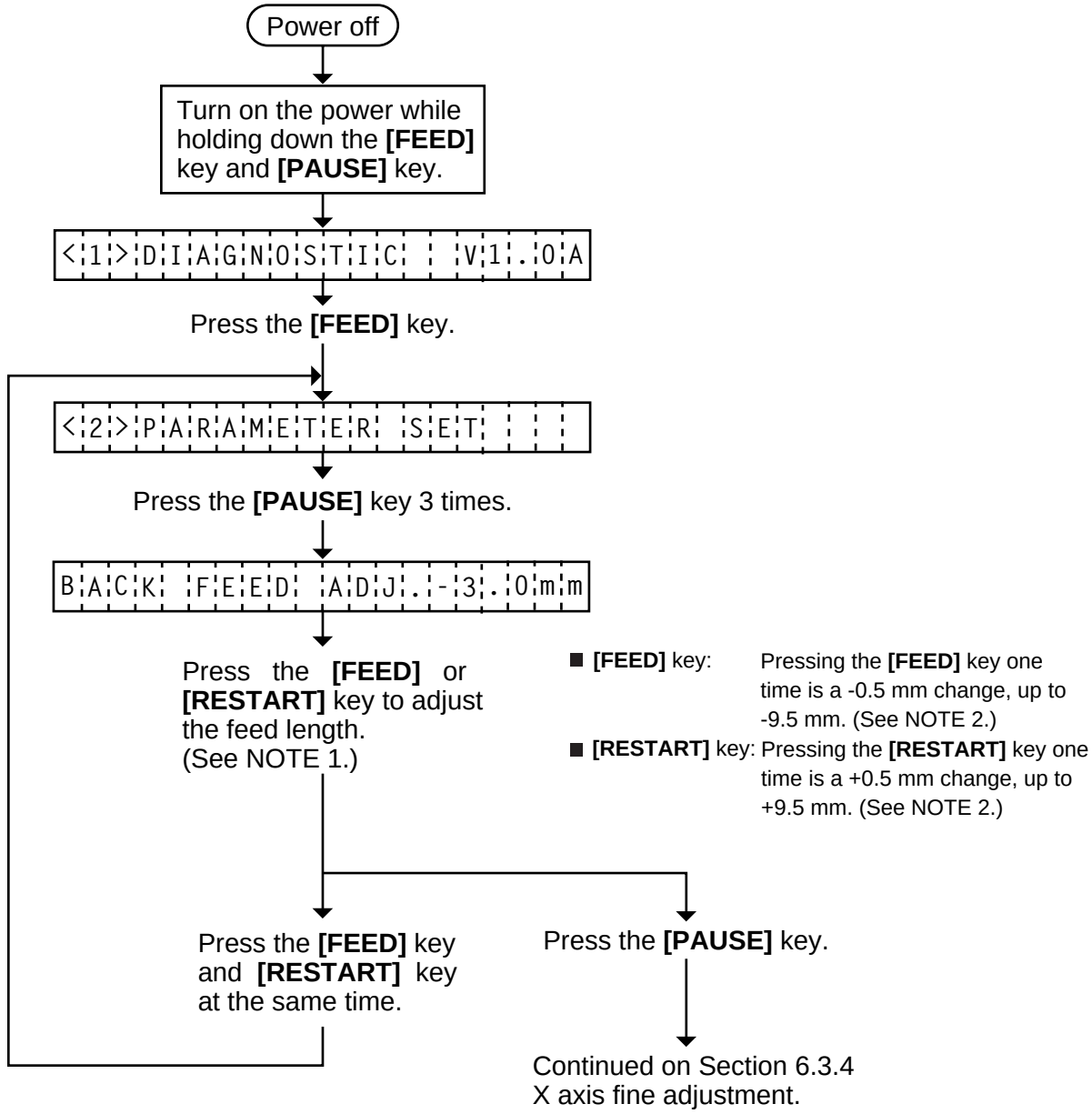
6.3.2 Cut/Strip Position Fine Adjustment


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key twice.
FEED ADJUST +12.0mm
Press the [FEED] or [RESTART] key to adjust the feed length. (See NOTE 1.)
■ [FEED] key: Pressing the [FEED] key one time is a -0.5 mm change, up to -50.0 mm. (See NOTE 2.)
■ [RESTART] key: Pressing the [RESTART] key one time is a +0.5 mm change, up to +50.0 mm. (See NOTE 2.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.3 Back feed length fine adjustment.

NOTES:
1. *Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*
2. *Max. fine adjustment –50.0 mm = Key fine adjustment value (–50.0 mm) + PC fine adjustment value (–50.0 mm)*

   When the value reaches the maximum, the value remains unchanged even if a subsequent fine adjustment is performed.
3. *A changed cut/strip position value is stored in memory by pressing the **[PAUSE]** key.*
4. *When using label with length of less than 38 mm, calculate the cut position fine adjustment value using the expression provided on page 6-21.*

6.3.3 Back Feed Length Fine Adjustment


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 3 times.
BACK FEED ADJ.-3.0mm
Press the [FEED] or [RESTART] key to adjust the feed length. (See NOTE 1.)
■ [FEED] key: Pressing the [FEED] key one time is a -0.5 mm change, up to -9.5 mm. (See NOTE 2.)
■ [RESTART] key: Pressing the [RESTART] key one time is a +0.5 mm change, up to +9.5 mm. (See NOTE 2.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.4 X axis fine adjustment.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

2. Max. fine adjustment –9.9 mm = Key fine adjustment value (–9.5 mm) + PC fine adjustment value (–9.9 mm)

When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

*3. A changed back feed value is stored in memory by pressing the **[PAUSE]** key.*

■ Feed Length Fine Adjustment Example

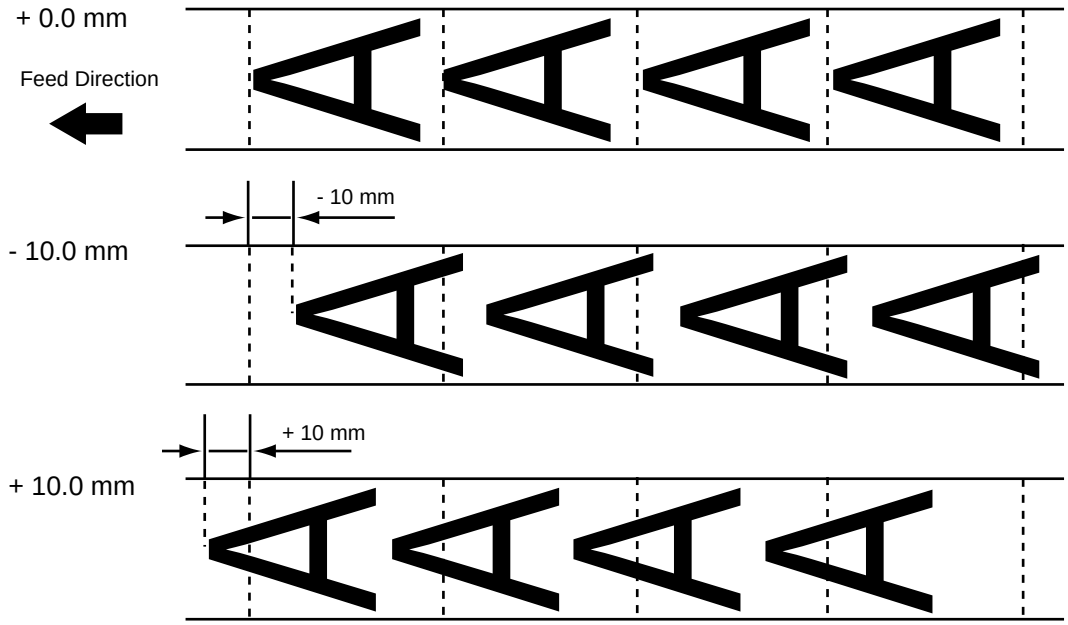


Fig. 6-4

Fig. 6-5

Fig. 6-6

■ Cut Position Fine Adjustment Example

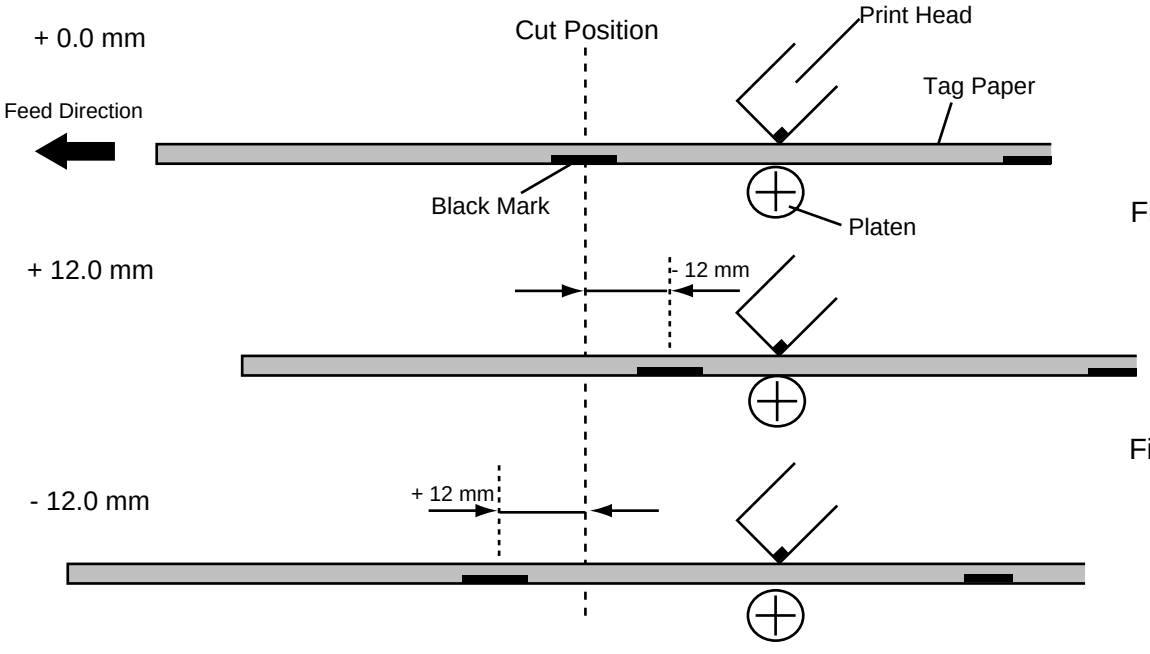


Fig. 6-7

Fig. 6-8

Fig. 6-9

■ **When using a label with a length of less than 38 mm :**

Case 1

Conditions: Issue command [ESC]XS, feed command [ESC]T and eject command [ESC]IB are received. Label pitch: 38.0 mm or less, with cut, feed gap sensor, cut position fine adjustment value –10 mm or less, and issue mode set to C (cut). When the above conditions are all met, the issue operation in cut issue mode is as follows:

① Head lifted —> ② Forward feed to the cut position —> ③ Head lowered —> ④ Cut —>

⑤ Head lifted —> ⑥ Backfeed to the home position —> ⑦ Head lowered.

Case 2

Generally the minimum label length which is available in cut mode is 38.0 mm. When using a label with a length of less than 38 mm, the edge of the label may be caught on the print head during back feed to the print start position after cutting the label gap, causing a improper print start position.

In this case set the cut position fine adjustment value after calculating the value using the following formula so that the unprinted label returns to the correct print start position.

However, use of this method will leave one or two printed label(s) between the print head and the cutter. Feed or print the label(s) to remove them.

(a) Formula for cut position fine adjustment value

Cut position fine adjustment value

= (the number of labels left between the print head and the cutter) x (span of label)

= (32.8 mm/label length) x (span of label)

* Omit the decimals of the value obtained by dividing 32.8 mm by the label length for one unit.

(example) Span of label : 30.0 mm, Label length : 24.0 mm

(32.8 mm/30.0 mm) x 30.0 mm = 1 x 30.0 mm = +30.0 mm

(b) Example

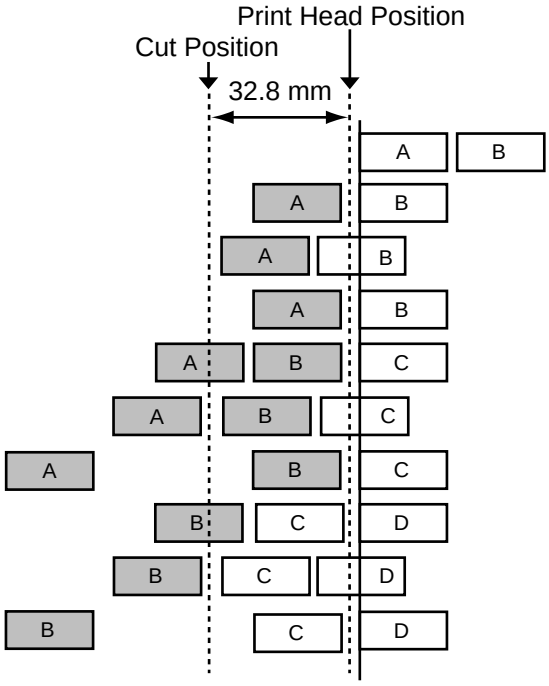


Fig. 6-10

① Idling
② Printing the first label (A) is completed.
③ Label A is fed to the cut position and the front gap is cut.
④ Label B is fed in the reverse direction to the print start position.
⑤ Printing the second label (B) is completed.
⑥ Label B is fed to the cut position and the front gap is cut.
⑦ Label C is fed in the reverse direction to the print start position.
⑧ To take away label B, label (C) is fed.
⑨ Label B is fed to the cut position and the front gap is cut.
⑩ Label D is fed in the reverse direction to the print start position.

■ Strip Position Fine Adjustment Example

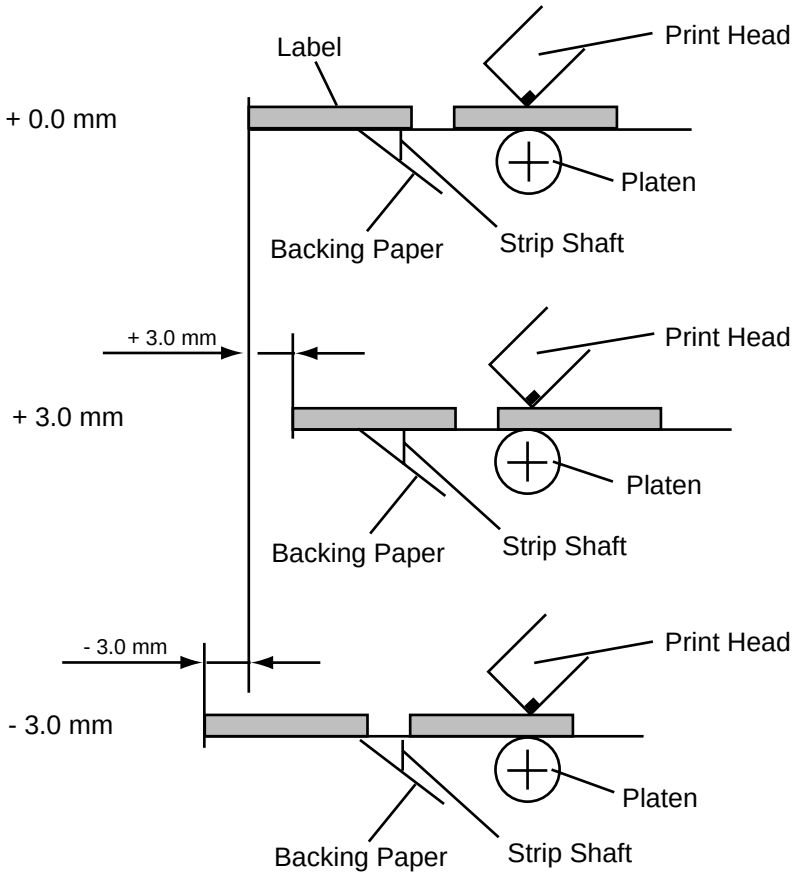


Fig. 6-11

Fig. 6-12

Fig. 6-13

NOTE: *The print stop position when printing the label in strip mode varies according to label length for the strip mode printing stops so that the edge of the strip shaft is 4 mm from the middle of the gap. This is because the gap length is programmed as 2 mm. When the gap length is 5 mm or more, the effective print length should be set to the value obtained by subtracting 2 mm from the label pitch, that is, set the gap length to 2 mm. If the print format hangs over the gap as a result, correct the print start position. If the print stop position is improper, refer to Section 6.3.2 and make a fine adjustment.*

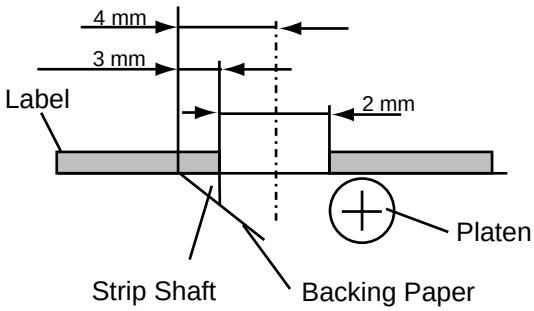


Fig. 6-14

■ Back Feed Length Fine Adjustment Example

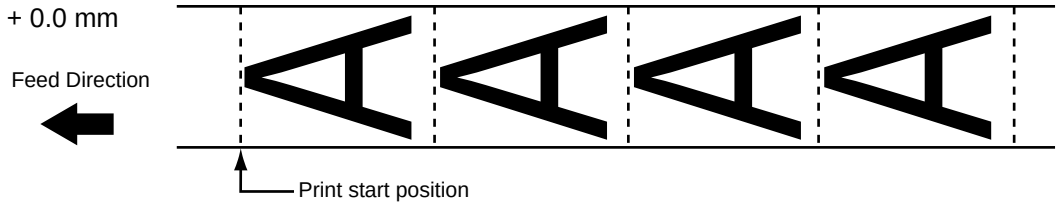


Fig. 6-15

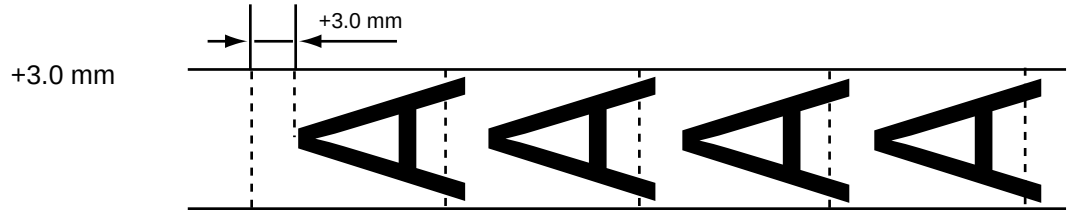


Fig. 6-16

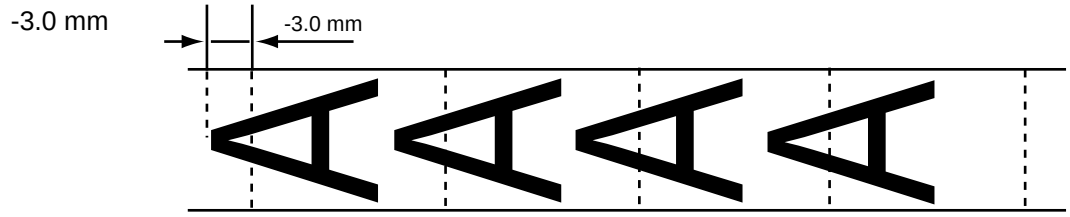
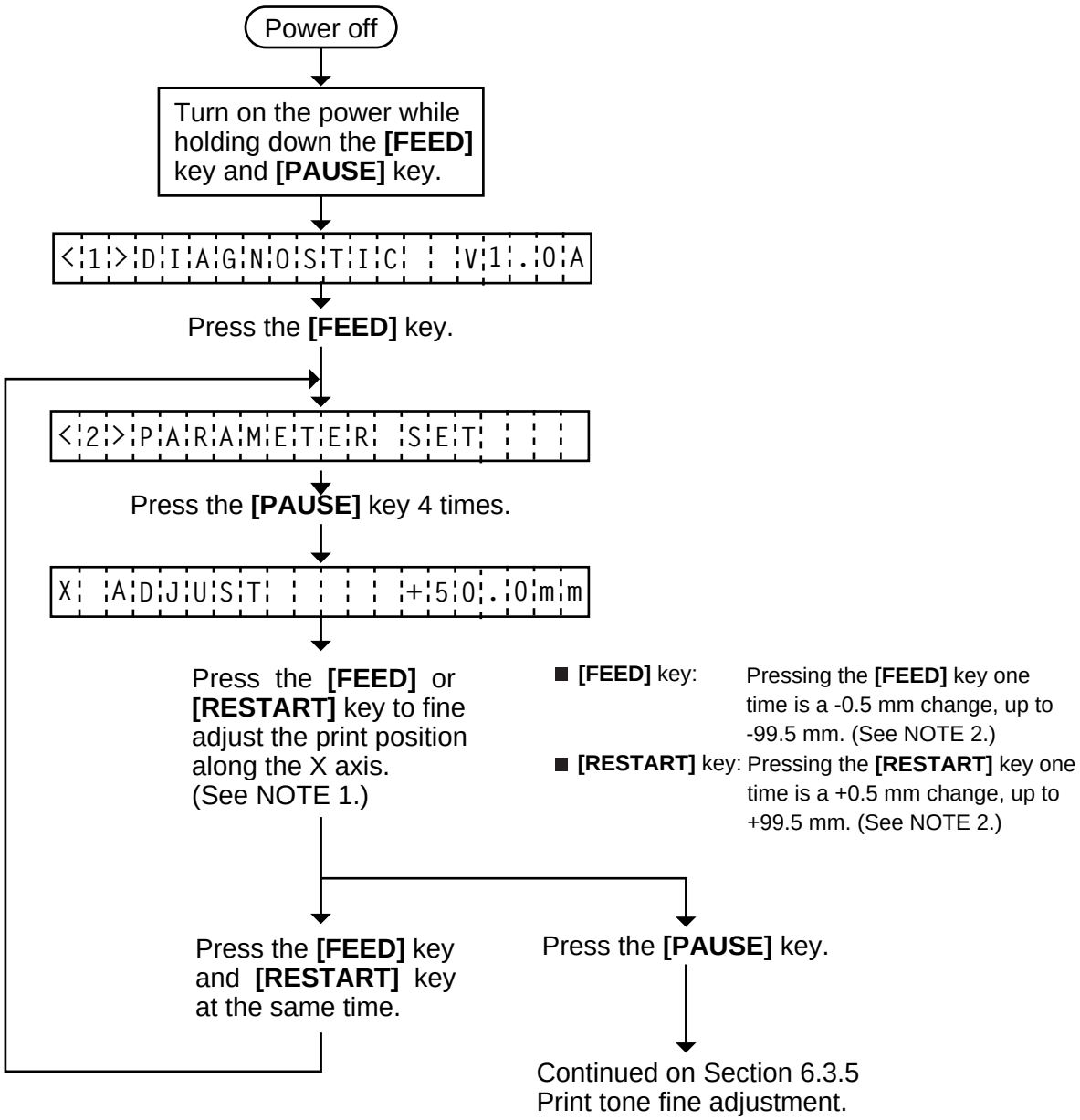


Fig. 6-17

6.3.4 X Axis Fine Adjustment


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 4 times.
X ADJUST +50.0mm
Press the [FEED] or [RESTART] key to fine adjust the print position along the X axis. (See NOTE 1.)
■ [FEED] key: Pressing the [FEED] key one time is a -0.5 mm change, up to -99.5 mm. (See NOTE 2.)
■ [RESTART] key: Pressing the [RESTART] key one time is a +0.5 mm change, up to +99.5 mm. (See NOTE 2.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.5 Print tone fine adjustment.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

2. Max. fine adjustment –99.5 mm = X axis value

When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

*3. A changed X axis is stored in memory by pressing the **[PAUSE]** key.*

■ **X Axis Fine Adjustment Example**

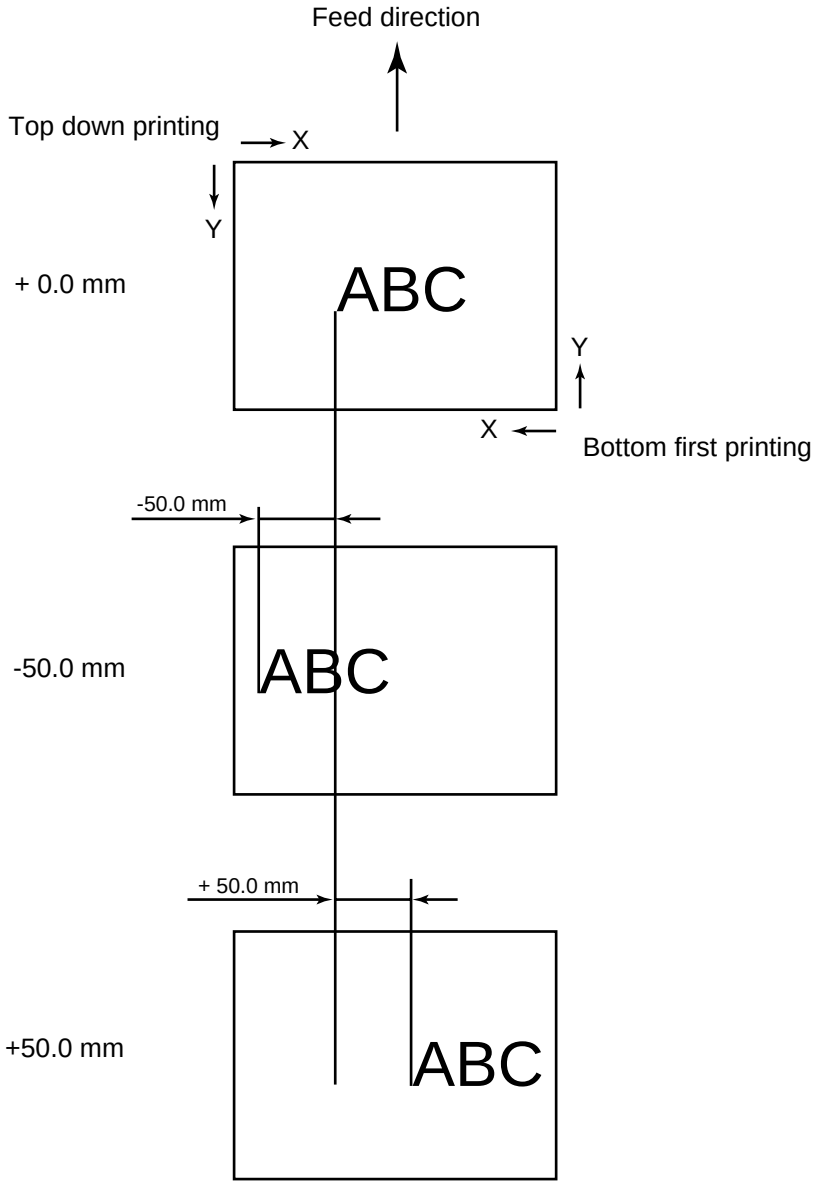


Fig. 6-18

Fig. 6-19

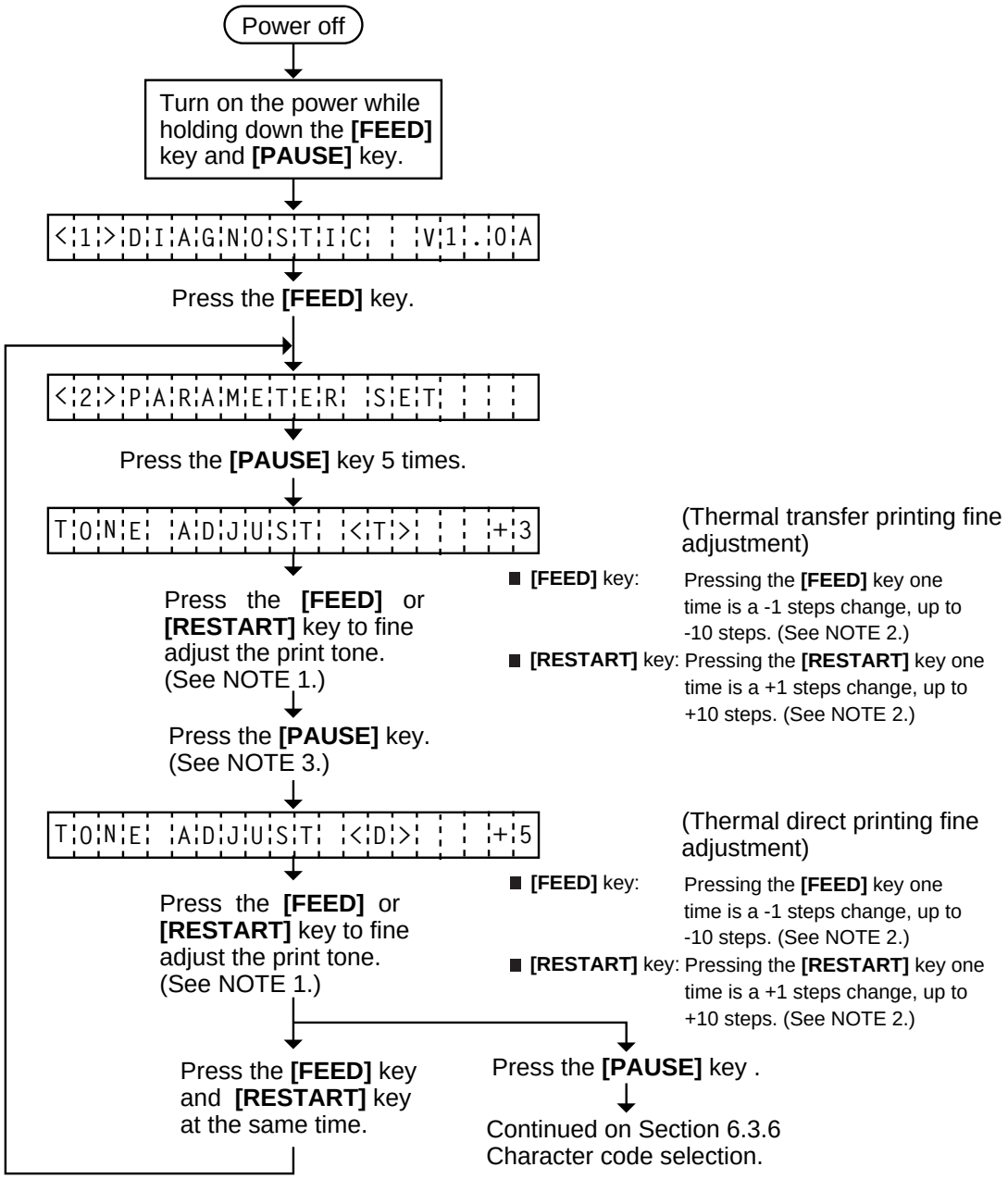
Fig. 6-20

NOTES: *4. The X axis fine adjustment is performed to fine adjust the X axis of the drawing in the left or right direction.*

5. Adjust the X axis in the effective print range. (After the value reaches the coordinate "0", the value remains unchanged even if the subsequent fine adjustment is performed in the negative direction.)

6. X axis fine adjustment cannot be used in self test mode or test printing.

6.3.5 Print Tone Fine Adjustment


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 5 times.
TONE ADJUST <T> +3
(Thermal transfer printing fine adjustment)
■ [FEED] key: Pressing the [FEED] key one time is a -1 steps change, up to -10 steps. (See NOTE 2.)
■ [RESTART] key: Pressing the [RESTART] key one time is a +1 steps change, up to +10 steps. (See NOTE 2.)
Press the [FEED] or [RESTART] key to fine adjust the print tone. (See NOTE 1.)
Press the [PAUSE] key. (See NOTE 3.)
TONE ADJUST <D> +5
(Thermal direct printing fine adjustment)
■ [FEED] key: Pressing the [FEED] key one time is a -1 steps change, up to -10 steps. (See NOTE 2.)
■ [RESTART] key: Pressing the [RESTART] key one time is a +1 steps change, up to +10 steps. (See NOTE 2.)
Press the [FEED] or [RESTART] key to fine adjust the print tone. (See NOTE 1.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key .
Continued on Section 6.3.6 Character code selection.

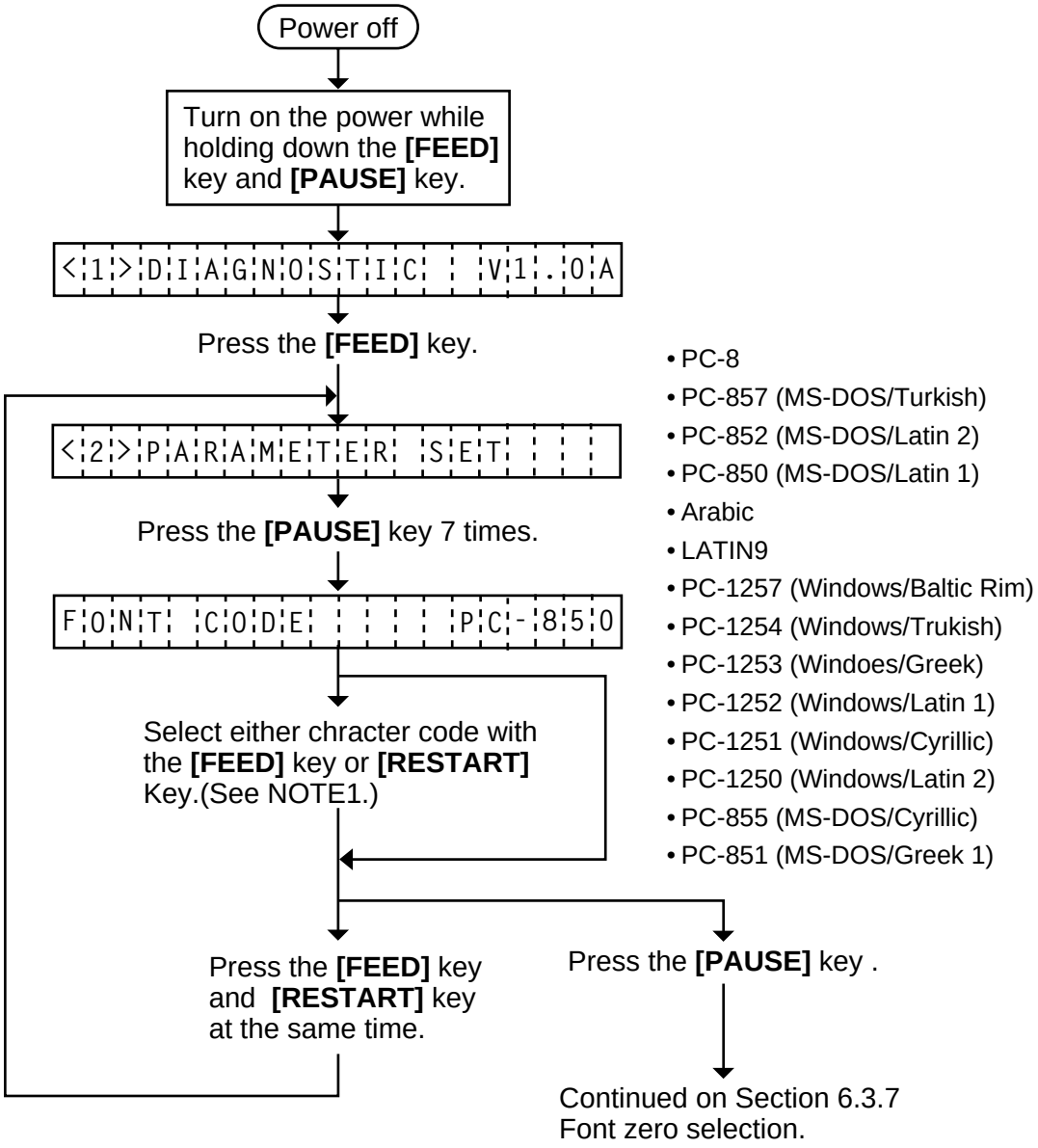
NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed print tone value is stored in memory by pressing the **[PAUSE]** key.*

3. Fine adjustment value equals to the sum of the values set by the PC command and system mode (key operation) and each max. value is –10 step. However, the upper limit of the adjustment value is decided according to the print speed to protect the print head. If the set value exceeds the following upper limit, it is automatically corrected to the proper value.

Print Speed	Thermal Transfer	Thermal Direct
3” / sec.	+10 step	+ 10 step
4” / sec.	+5 step	+ 5 step
8” / sec.	+2 step	+ 2 step

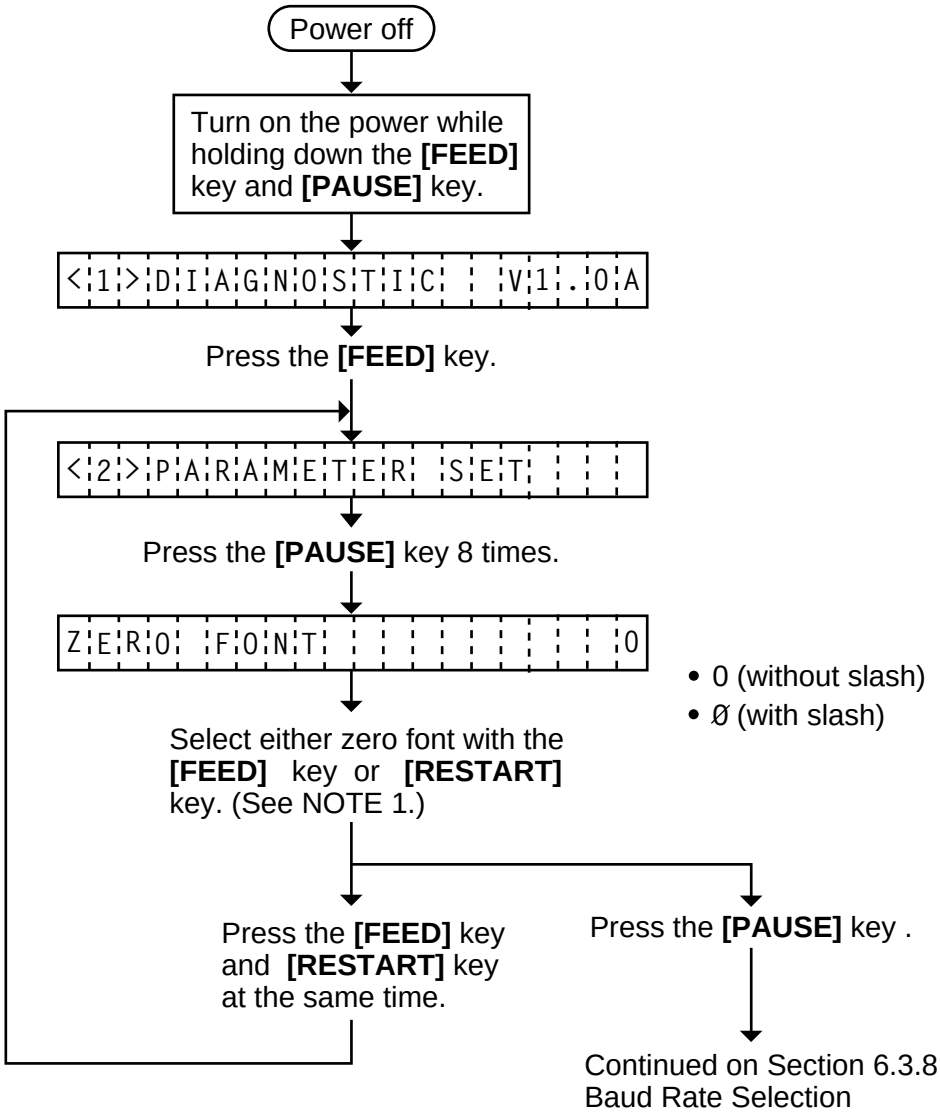
6.3.6 Character Code Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 7 times.
FONT CODE PC-850
Select either chracter code with the [FEED] key or [RESTART] Key.(See NOTE1.)
• PC-8
• PC-857 (MS-DOS/Turkish)
• PC-852 (MS-DOS/Latin 2)
• PC-850 (MS-DOS/Latin 1)
• Arabic
• LATIN9
• PC-1257 (Windows/Baltic Rim)
• PC-1254 (Windows/Trukish)
• PC-1253 (Windoes/Greek)
• PC-1252 (Windows/Latin 1)
• PC-1251 (Windows/Cyrillic)
• PC-1250 (Windows/Latin 2)
• PC-855 (MS-DOS/Cyrillic)
• PC-851 (MS-DOS/Greek 1)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key .
Continued on Section 6.3.7 Font zero selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed font code is stored in memory by pressing the **[PAUSE]** key.*

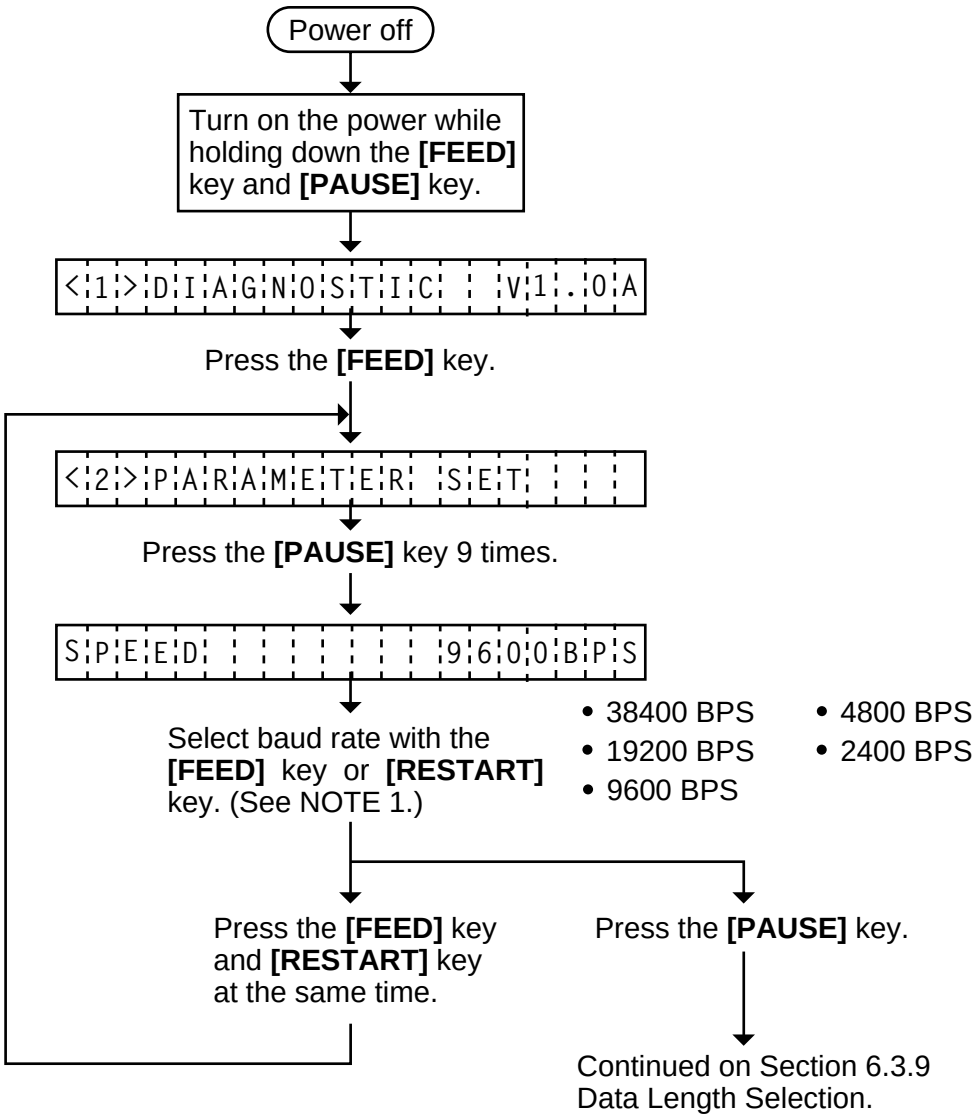
6.3.7 Font Zero Selection


Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.0A
Press the **[FEED]** key.
<2>PARAMETER SET
Press the **[PAUSE]** key 8 times.
ZERO FONT 0
• 0 (without slash)
• Ø (with slash)
Select either zero font with the **[FEED]** key or **[RESTART]** key. (See NOTE 1.)
Press the **[FEED]** key and **[RESTART]** key at the same time.
Press the **[PAUSE]** key .
Continued on Section 6.3.8 Baud Rate Selection

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed zero font is stored in memory by pressing the **[PAUSE]** key.*

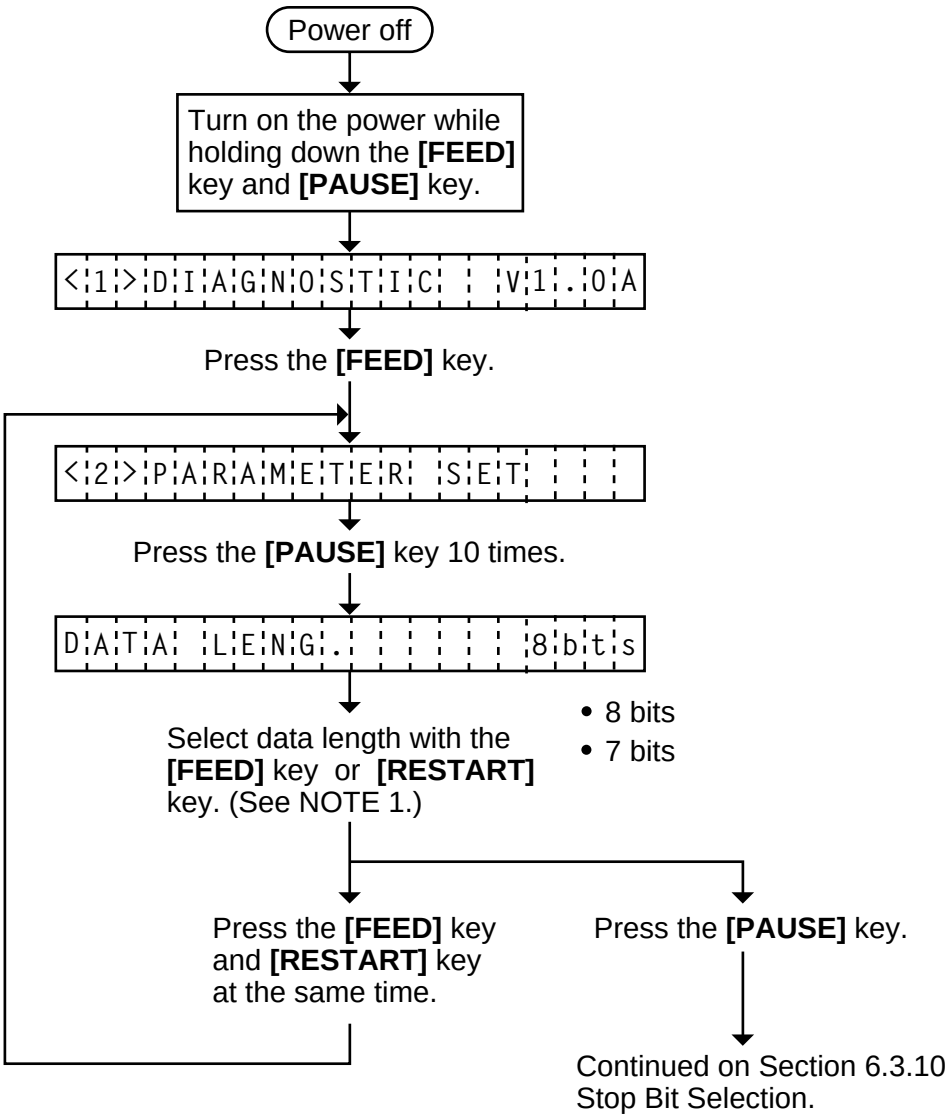
6.3.8 Baud Rate Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 9 times.
SPEED 9600BPS
Select baud rate with the [FEED] key or [RESTART] key. (See NOTE 1.)
• 38400 BPS
• 19200 BPS
• 9600 BPS
• 4800 BPS
• 2400 BPS
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.9 Data Length Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed baud rate is stored in memory by pressing the **[PAUSE]** key.*

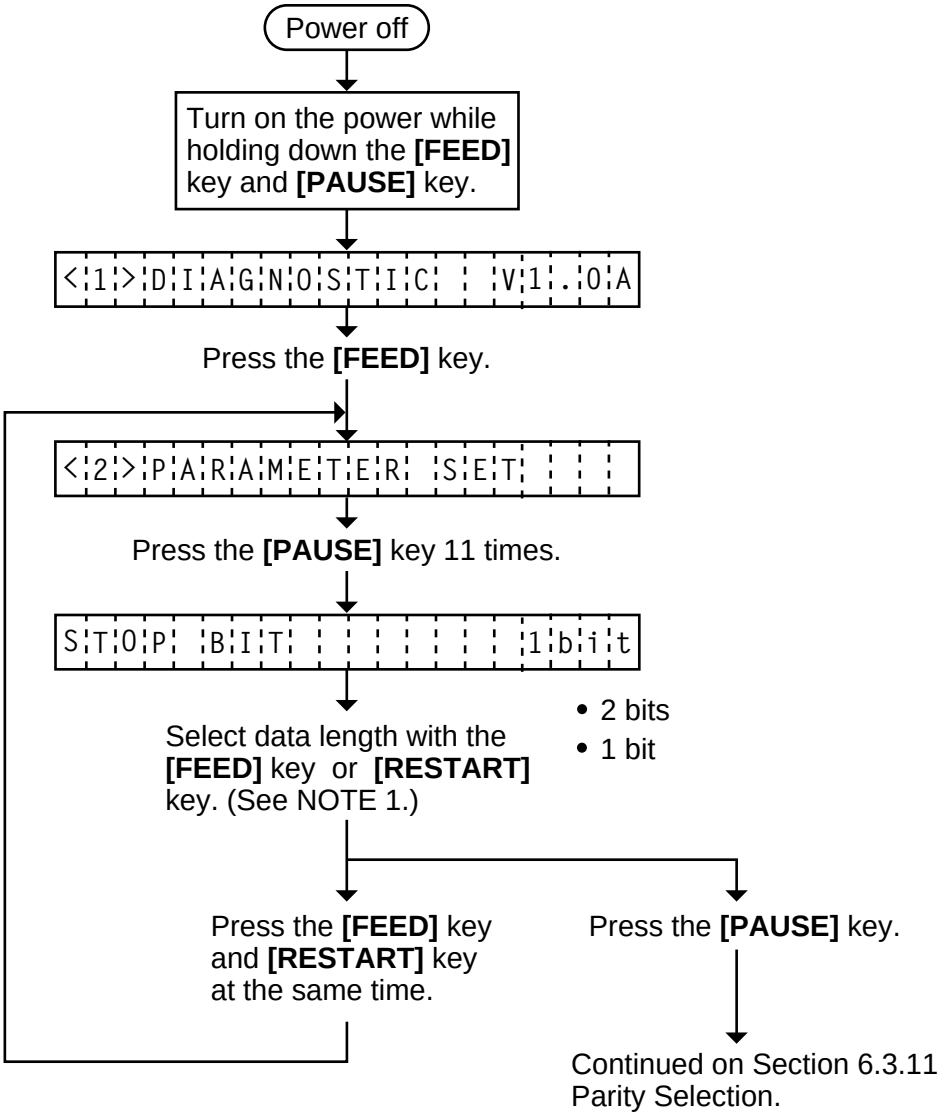
6.3.9 Data Length Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 10 times.
DATA LENG. 8bits
• 8 bits
• 7 bits
Select data length with the [FEED] key or [RESTART] key. (See NOTE 1.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.10 Stop Bit Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed data length is stored in memory by pressing the **[PAUSE]** key.*

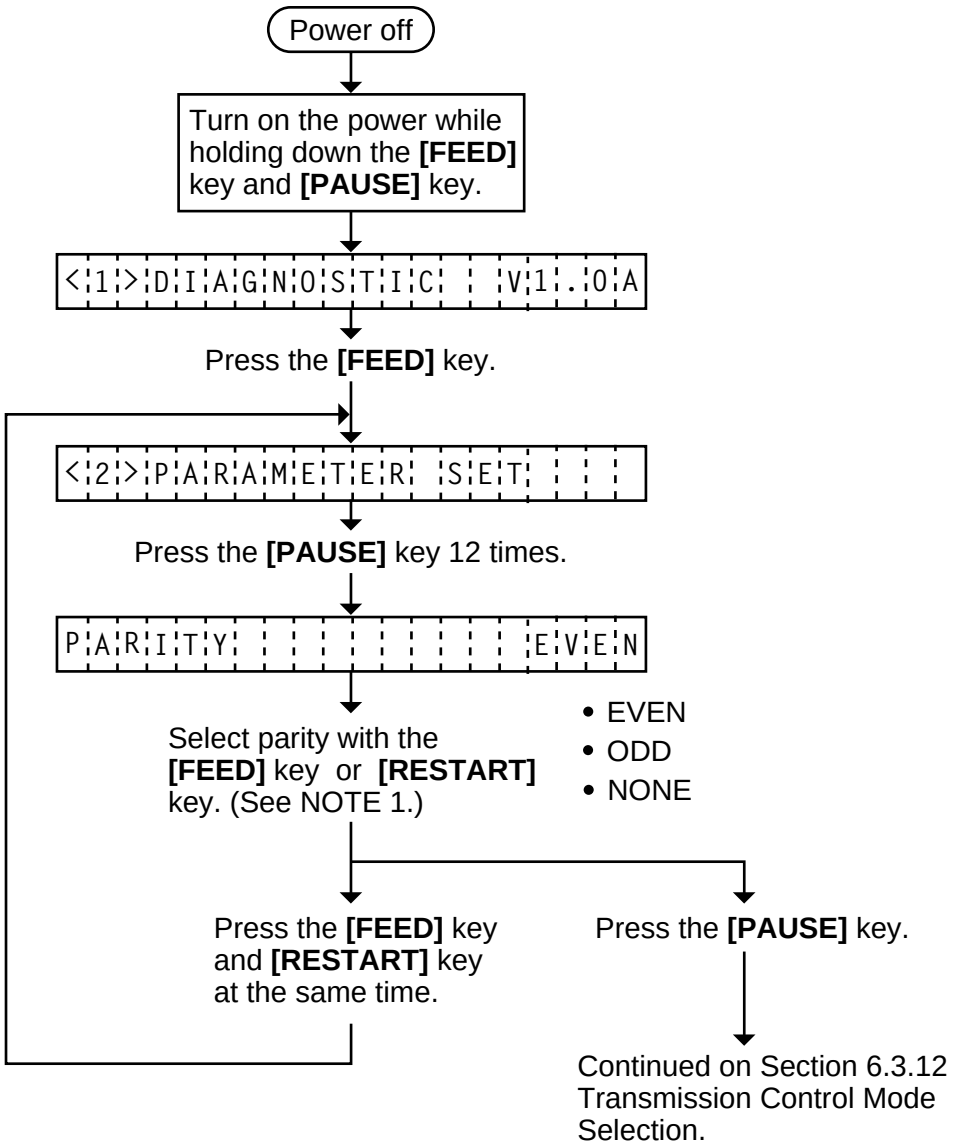
6.3.10 Stop Bit Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 11 times.
STOP BIT 1bit
• 2 bits
• 1 bit
Select data length with the [FEED] key or [RESTART] key. (See NOTE 1.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.11 Parity Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed data length is stored in memory by pressing the **[PAUSE]** key.*

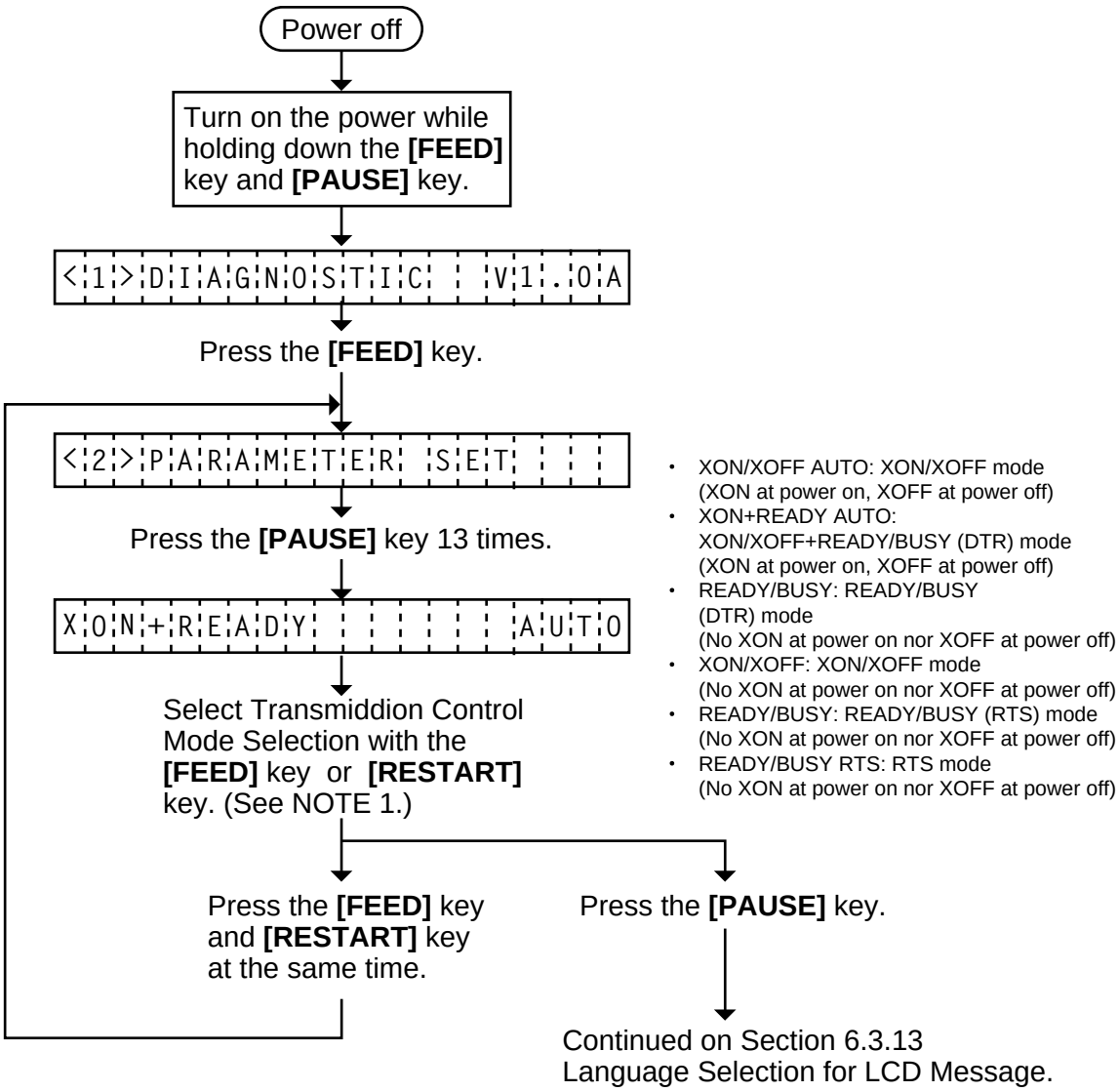
6.3.11 Parity Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 12 times.
PARITY EVEN
Select parity with the [FEED] key or [RESTART] key. (See NOTE 1.)
• EVEN
• ODD
• NONE
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.12 Transmission Control Mode Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed parity is stored in memory by pressing the **[PAUSE]** key.*

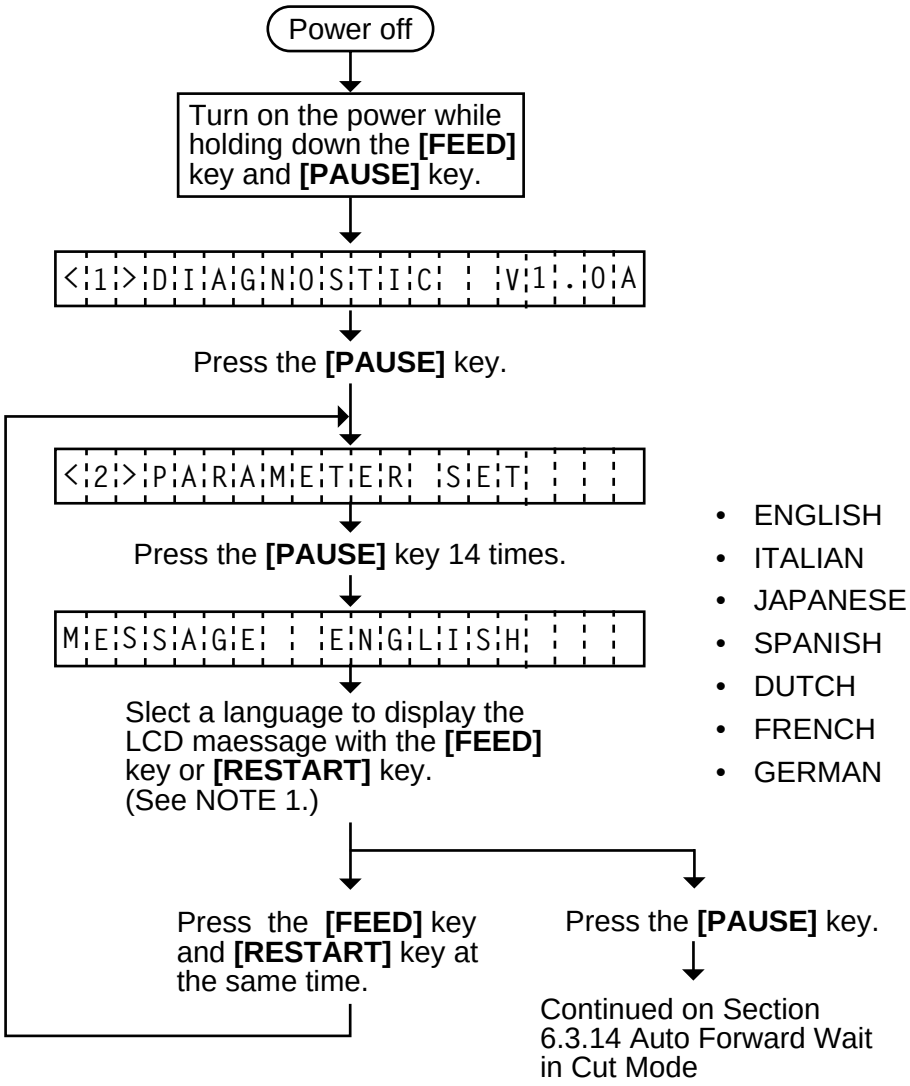
6.3.12 Transmission Control Mode Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 13 times.
XON+READY AUTO
Select Transmiddion Control Mode Selection with the [FEED] key or [RESTART] key. (See NOTE 1.)
• XON/XOFF AUTO: XON/XOFF mode (XON at power on, XOFF at power off)
• XON+READY AUTO: XON/XOFF+READY/BUSY (DTR) mode (XON at power on, XOFF at power off)
• READY/BUSY: READY/BUSY (DTR) mode (No XON at power on nor XOFF at power off)
• XON/XOFF: XON/XOFF mode (No XON at power on nor XOFF at power off)
• READY/BUSY: READY/BUSY (RTS) mode (No XON at power on nor XOFF at power off)
• READY/BUSY RTS: RTS mode (No XON at power on nor XOFF at power off)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.13 Language Selection for LCD Message.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed transmission control mode is stored in memory by pressing the **[PAUSE]** key.*

6.3.13 Language Selection for LCD Message

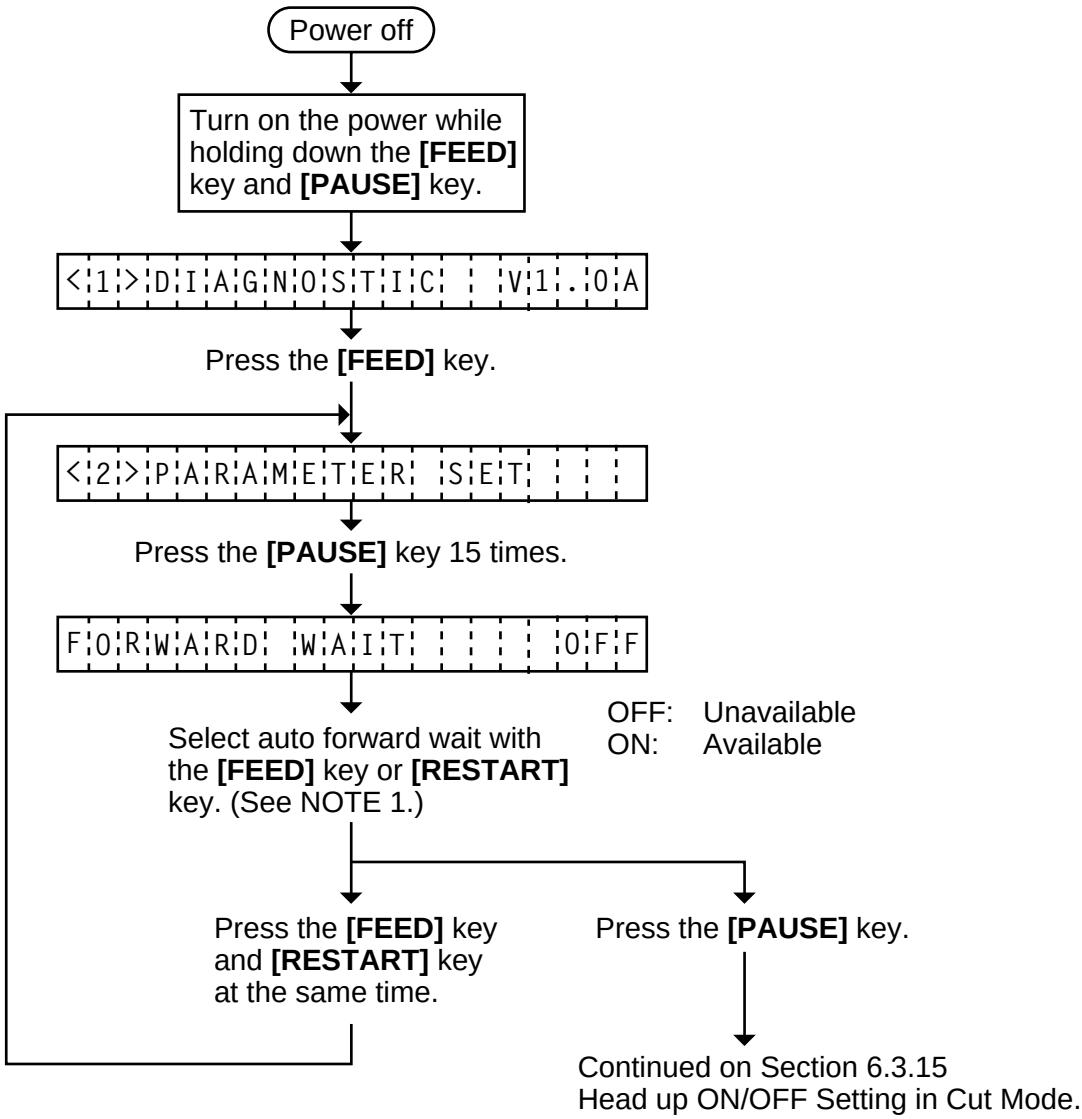

Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [PAUSE] key.
<2>PARAMETER SET
Press the [PAUSE] key 14 times.
MESSAGE ENGLISH
Slect a language to display the LCD maessage with the [FEED] key or [RESTART] key. (See NOTE 1.)
• ENGLISH
• ITALIAN
• JAPANESE
• SPANISH
• DUTCH
• FRENCH
• GERMAN
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.14 Auto Forward Wait in Cut Mode

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed language is stored in memory by pressing the **[PAUSE]** key.*

3. A changed language is not cleared by a parameter clear.

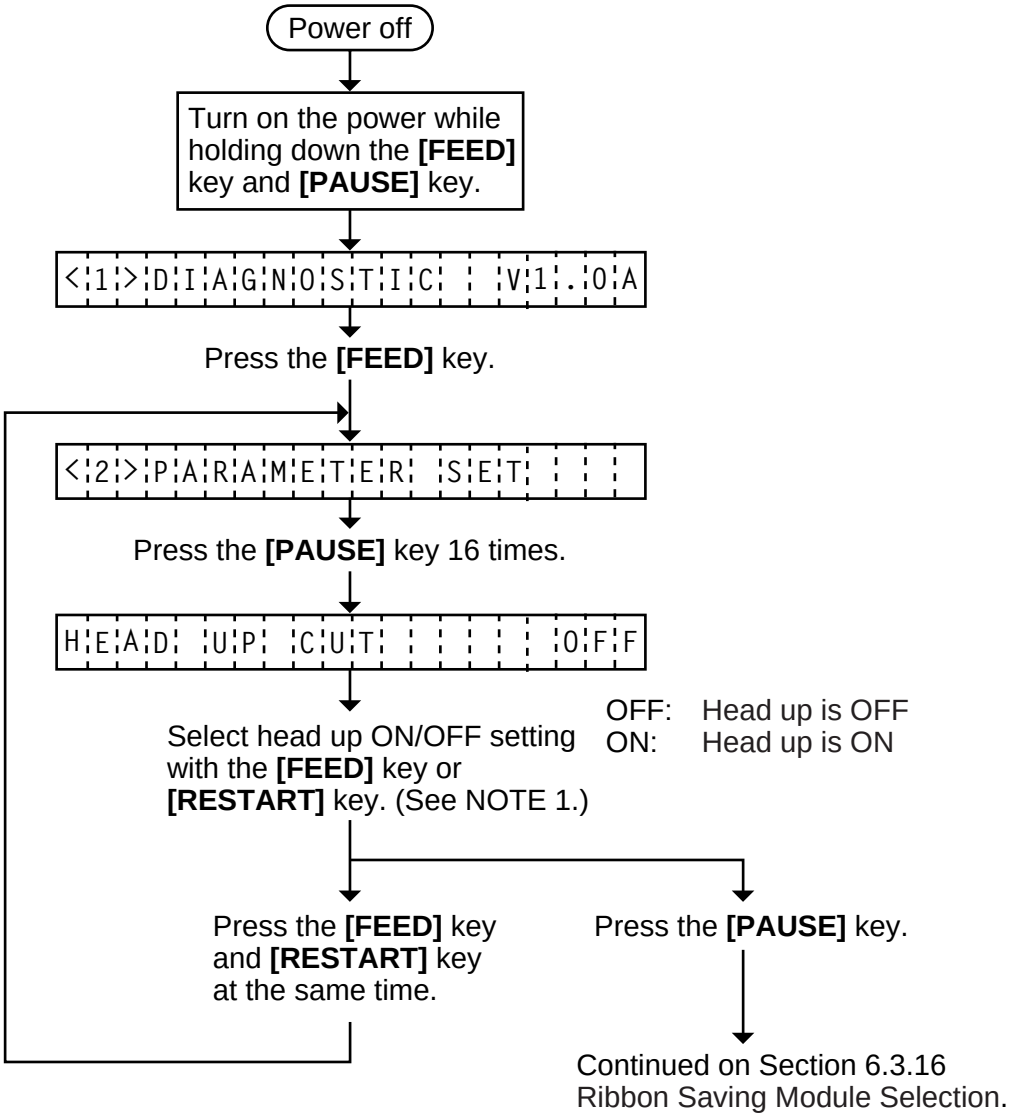
6.3.14 Auto Forward Wait in Cut Mode


Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.0A
Press the **[FEED]** key.
<2>PARAMETER SET
Press the **[PAUSE]** key 15 times.
FORWARD WAIT OFF
Select auto forward wait with the **[FEED]** key or **[RESTART]** key. (See NOTE 1.)
OFF: Unavailable
ON: Available
Press the **[FEED]** key and **[RESTART]** key at the same time.
Press the **[PAUSE]** key.
Continued on Section 6.3.15 Head up ON/OFF Setting in Cut Mode.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed data length is stored in memory by pressing the **[PAUSE]** key.*

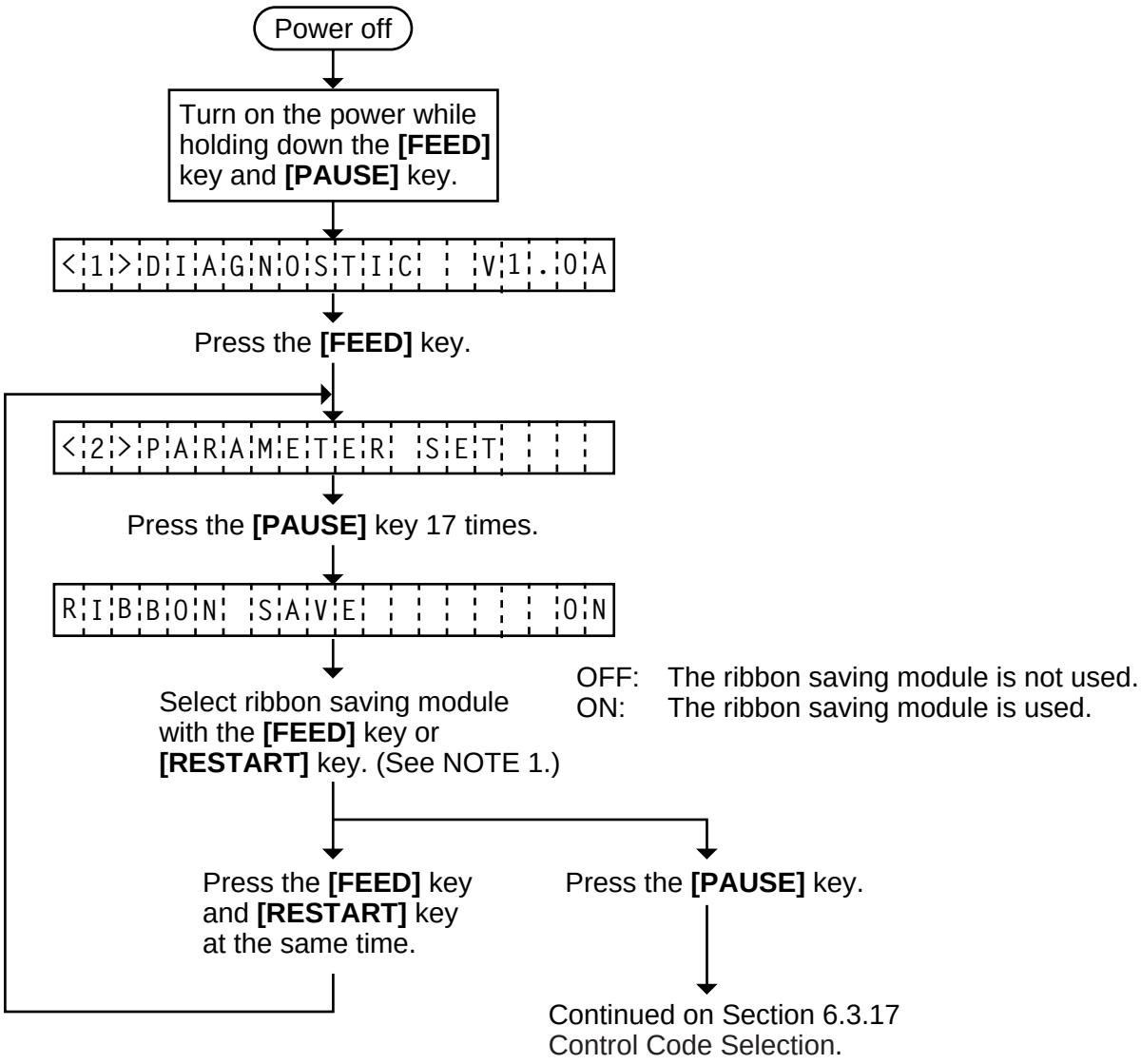
6.3.15 Head up ON/OFF Setting in Cut Mode


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 16 times.
HEAD UP CUT OFF
OFF: Head up is OFF
ON: Head up is ON
Select head up ON/OFF setting with the [FEED] key or [RESTART] key. (See NOTE 1.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.16 Ribbon Saving Module Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed data length is stored in memory by pressing the **[PAUSE]** key.*

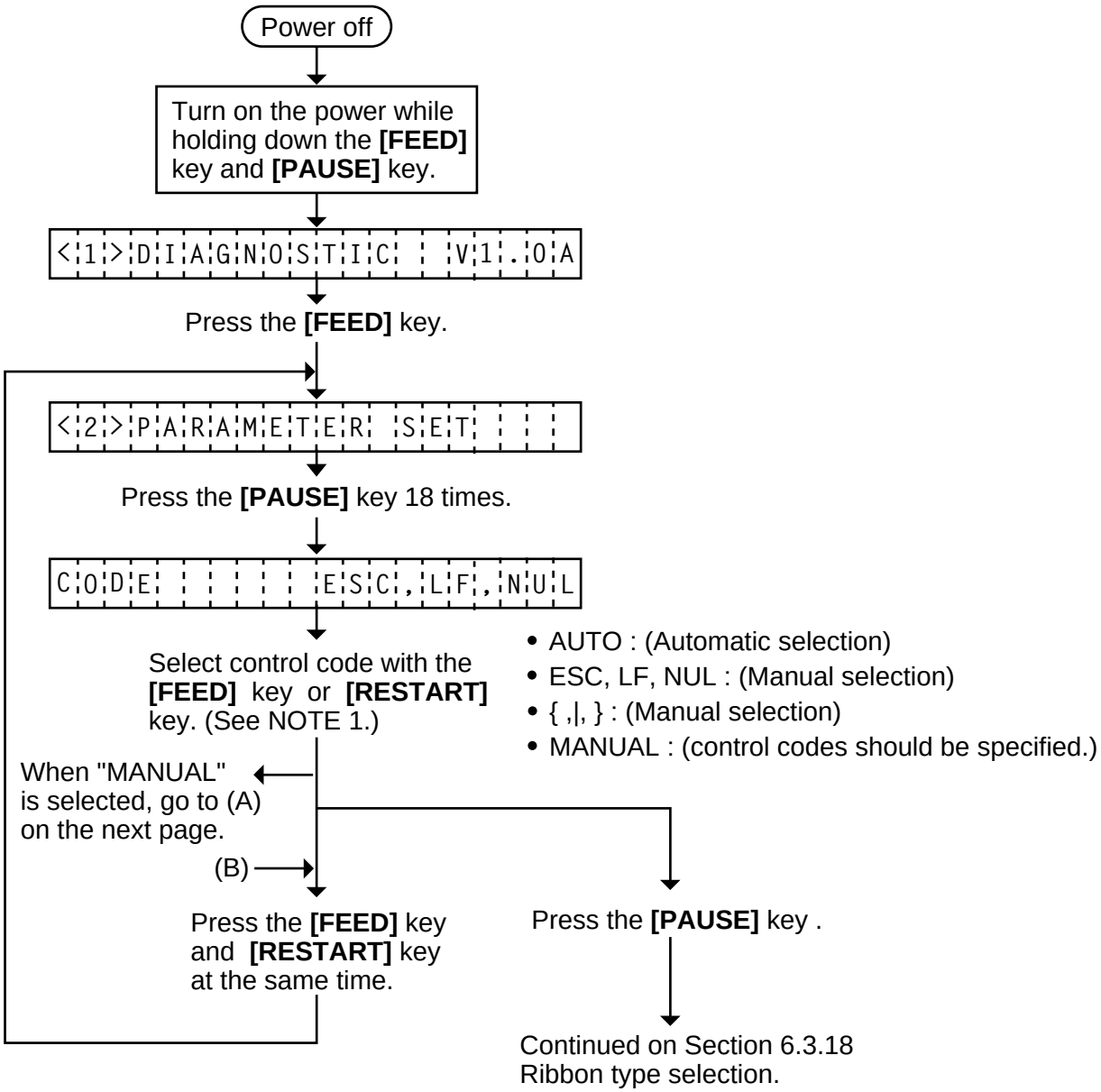
6.3.16 Ribbon Saving Module Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 17 times.
RIBBON SAVE ON
Select ribbon saving module with the [FEED] key or [RESTART] key. (See NOTE 1.)
OFF: The ribbon saving module is not used.
ON: The ribbon saving module is used.
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.17 Control Code Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed data length is stored in memory by pressing the **[PAUSE]** key.*

6.3.17 Control Code Selection

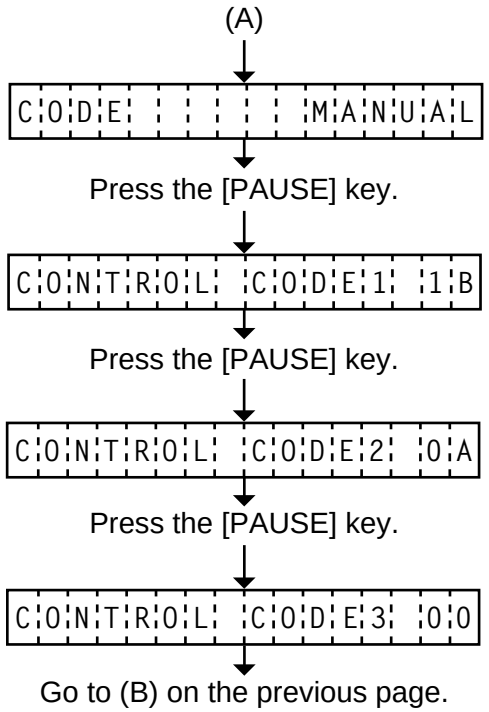

Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 18 times.
CODE ESC,LF,NUL
Select control code with the [FEED] key or [RESTART] key. (See NOTE 1.)
• AUTO : (Automatic selection)
• ESC, LF, NUL : (Manual selection)
• { ,|, } : (Manual selection)
• MANUAL : (control codes should be specified.)
When "MANUAL" is selected, go to (A) on the next page.
(B)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key .
Continued on Section 6.3.18 Ribbon type selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed control code is stored in memory by pressing the **[PAUSE]** key.*

3. When "AUTO", "ESC, FL, NUL", or "{ ,I, }" is selected, be sure to select the Non-transmissive ribbon in the ribbon type selection operation.

4. When "MANUAL" is selected be sure to specify all the control codes 1 to 3. Failure to do this disables selection of "MANUAL".



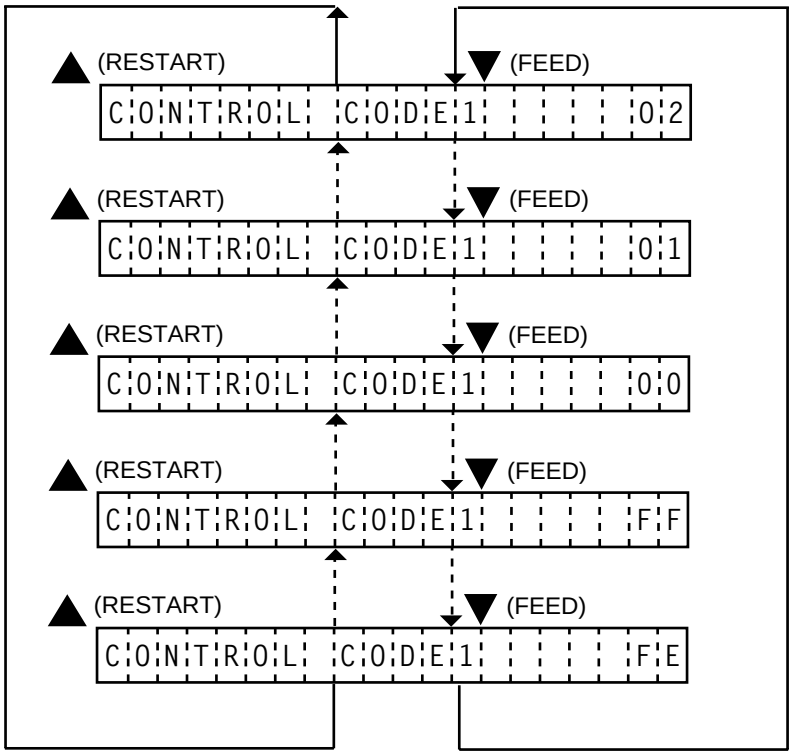
Change the control code.

Set the control code 1.
(equivalent to ESC, {.)

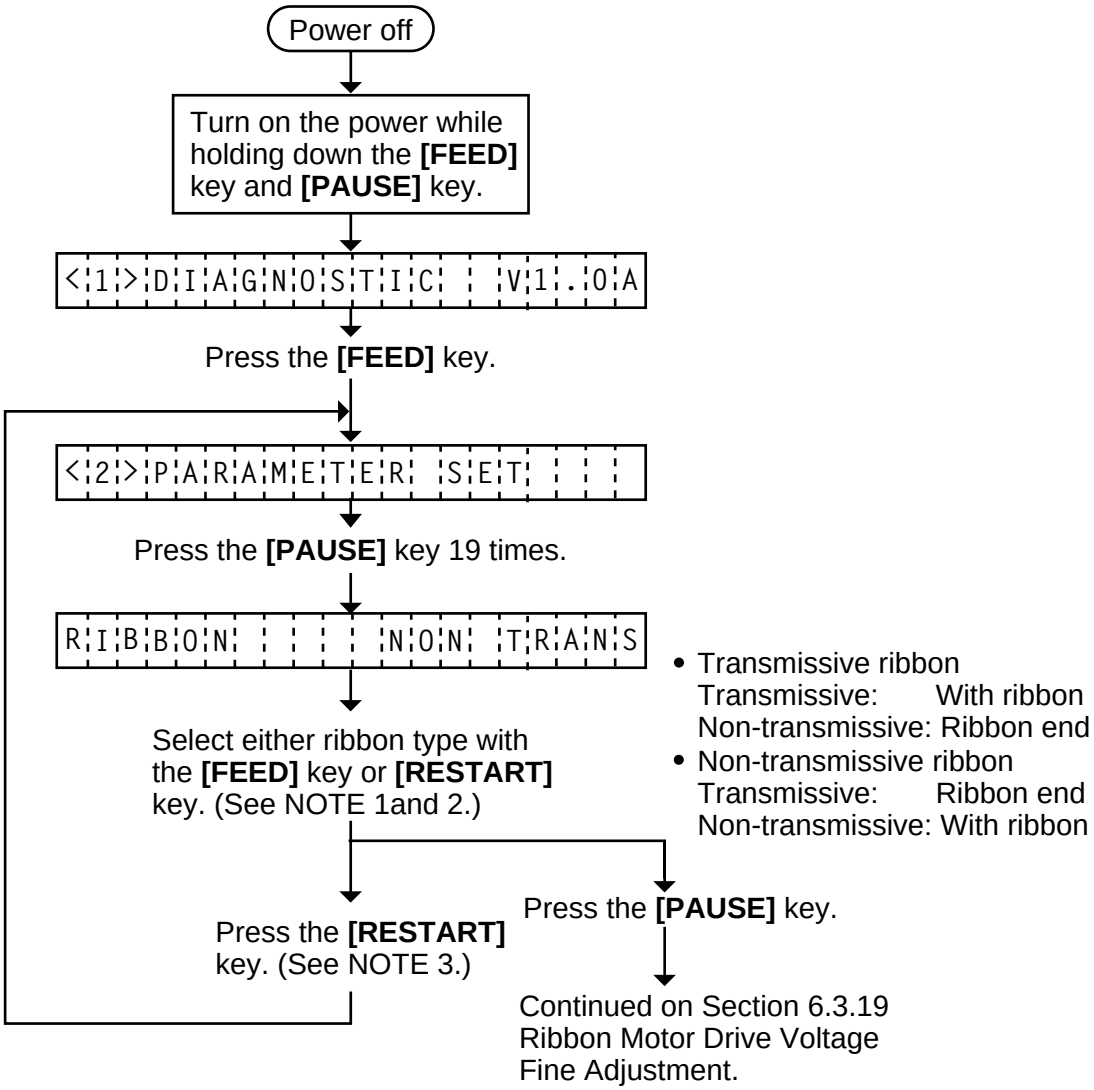
Set the control code 2.
(equivalent to LF, |.)

Set the control code 3.
(equivalent to NUL, }.)

NOTE: *Refer to the following the selection of the control codes 1 to 3.*



6.3.18 Ribbon Type Selection

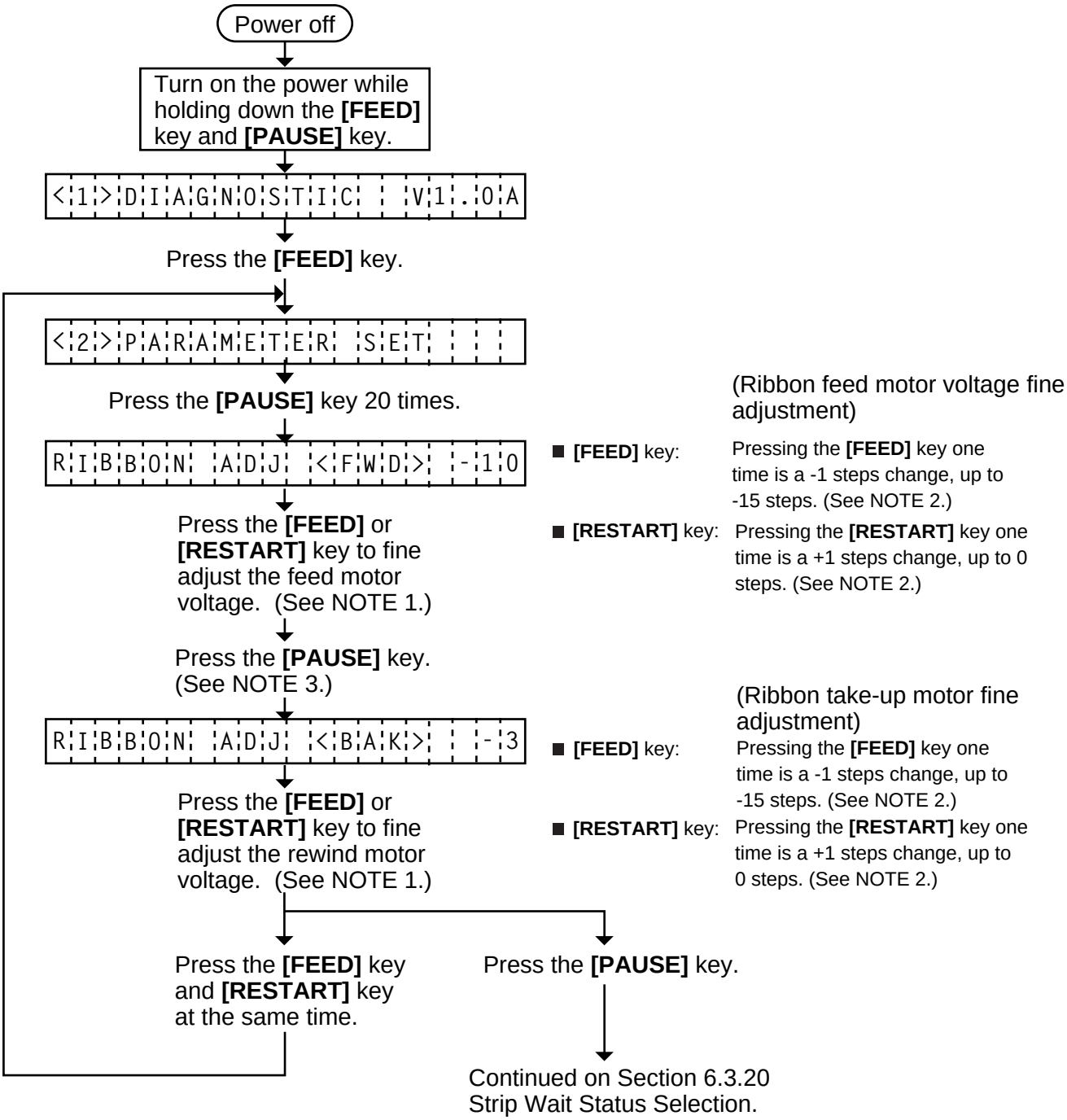

Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 19 times.
RIBBON NON TRANS
Select either ribbon type with the [FEED] key or [RESTART] key. (See NOTE 1and 2.)
• Transmissive ribbon
Transmissive: With ribbon
Non-transmissive: Ribbon end
• Non-transmissive ribbon
Transmissive: Ribbon end
Non-transmissive: With ribbon
Press the [RESTART] key. (See NOTE 3.)
Press the [PAUSE] key.
Continued on Section 6.3.19 Ribbon Motor Drive Voltage Fine Adjustment.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

2. Non-transmissive (NON TRANS.) ribbon cannot be used so the ribbon type must be set to transmissive (TRANS.) ribbon.

*3. A changed ribbon type is stored in memory by pressing the **[PAUSE]** key.*

6.3.19 Ribbon Motor Drive Voltage Fine Adjustment


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 20 times.
RIBBON ADJ <FWD> -10
Press the [FEED] or [RESTART] key to fine adjust the feed motor voltage. (See NOTE 1.)
Press the [PAUSE] key. (See NOTE 3.)
RIBBON ADJ <BAK> -3
Press the [FEED] or [RESTART] key to fine adjust the rewind motor voltage. (See NOTE 1.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.20 Strip Wait Status Selection.
(Ribbon feed motor voltage fine adjustment)
■ [FEED] key: Pressing the [FEED] key one time is a -1 steps change, up to -15 steps. (See NOTE 2.)
■ [RESTART] key: Pressing the [RESTART] key one time is a +1 steps change, up to 0 steps. (See NOTE 2.)
(Ribbon take-up motor fine adjustment)
■ [FEED] key: Pressing the [FEED] key one time is a -1 steps change, up to -15 steps. (See NOTE 2.)
■ [RESTART] key: Pressing the [RESTART] key one time is a +1 steps change, up to 0 steps. (See NOTE 2.)

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

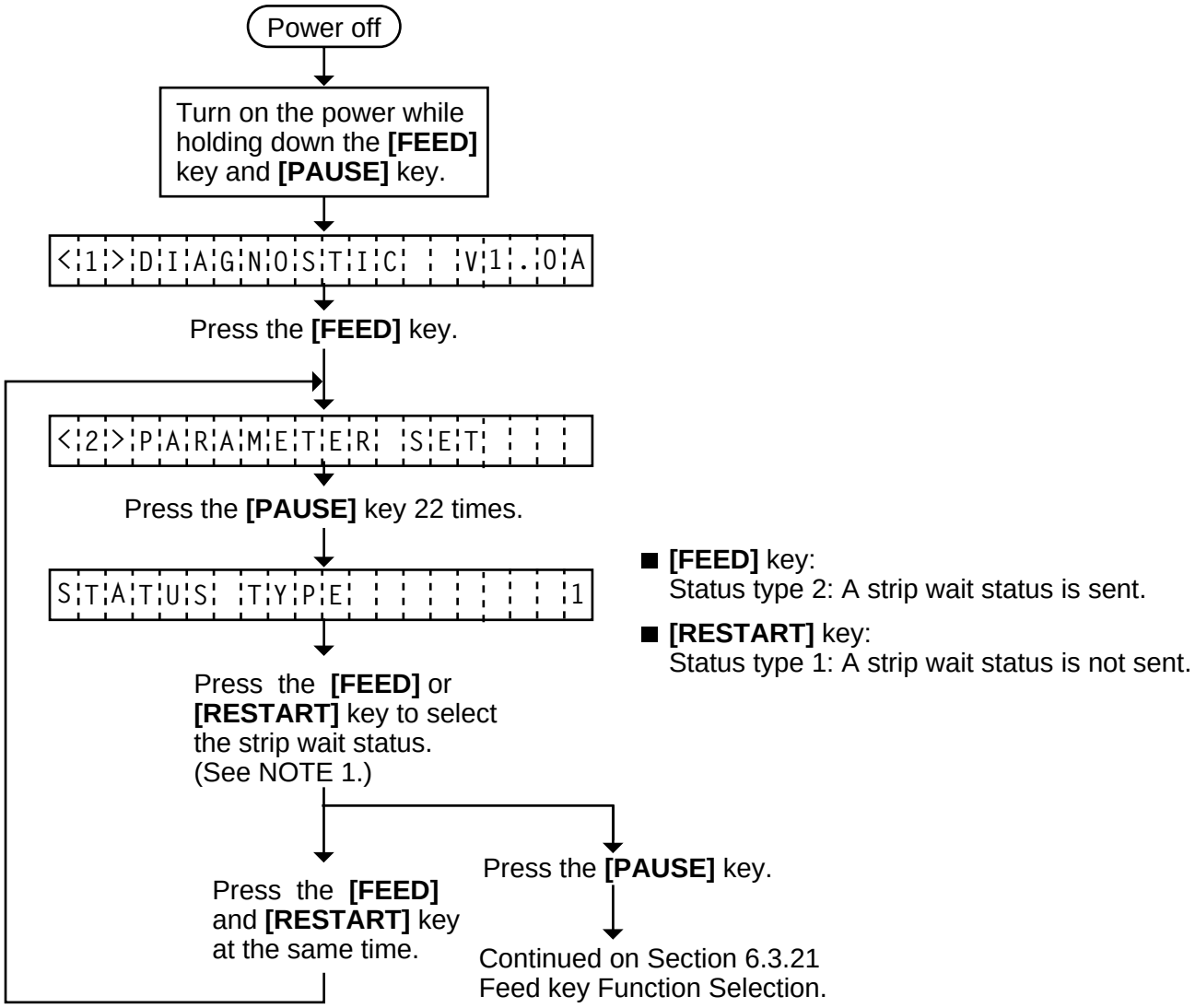
2. Max. fine adjustment -15 steps = Key fine adjustment value (-15 steps)+PC fine adjustment value (-15 steps)

When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

*3. A changed motor voltage value is stored in memory by pressing the **[PAUSE]** key.*

4. One step corresponds to 5% of the standard voltage and up to 75% of the voltage can be decreased.

6.3.20 Strip Wait Status Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 22 times.
STATUS TYPE 1
Press the [FEED] or [RESTART] key to select the strip wait status. (See NOTE 1.)
Press the [FEED] and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.21 Feed key Function Selection.
■ [FEED] key:
Status type 2: A strip wait status is sent.
■ [RESTART] key:
Status type 1: A strip wait status is not sent.

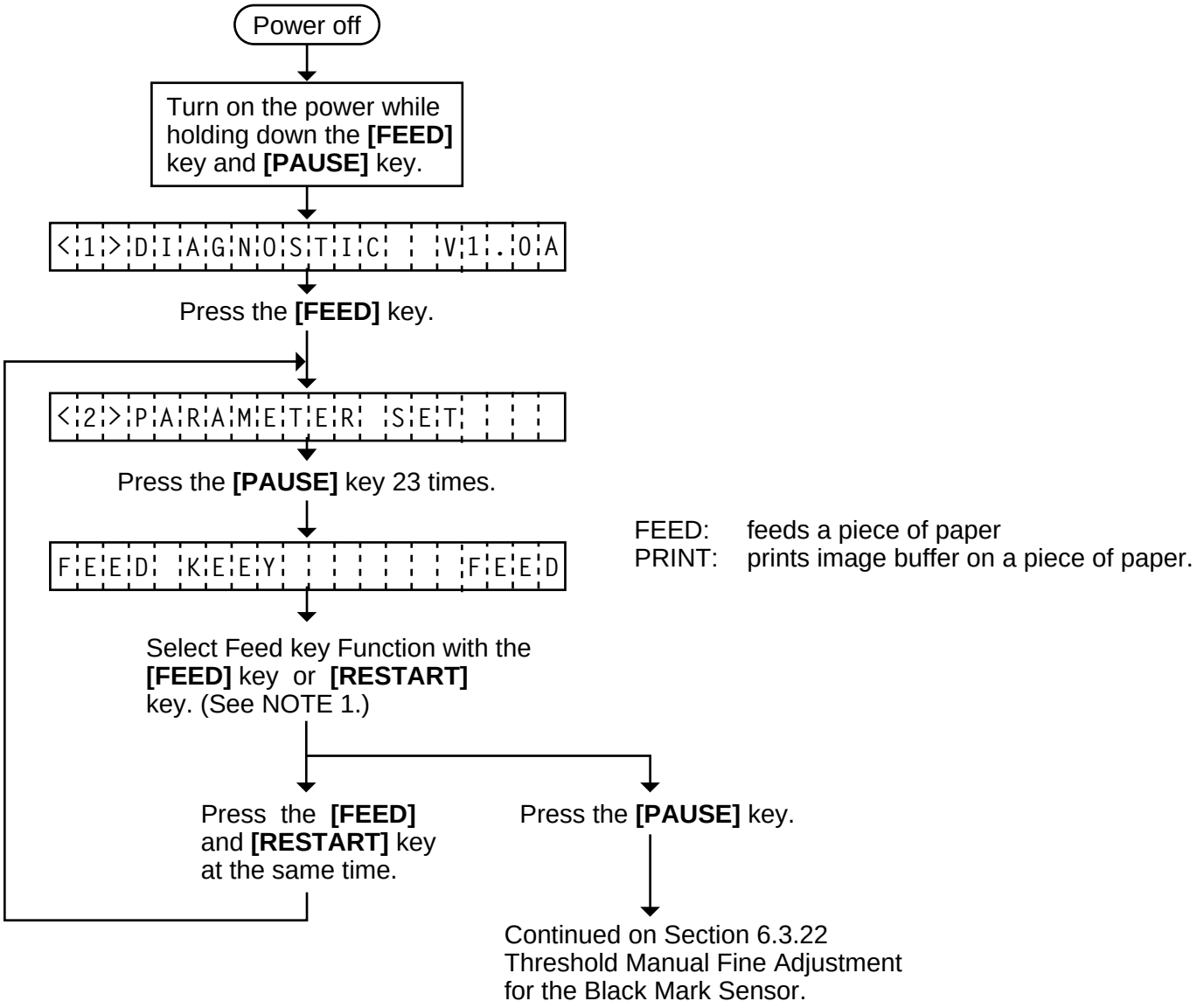
NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

2. When the status type 1 is selected, the printer will send (00H) in response to the status request command sent from the PC while a label stays at the strip sensor (when idling, after feeding, or all printing finished).

When the status type 2 is selected, the printer will send (05H) in response to the status request command sent from the PC while a label stays at the strip sensor (when idling, after feeding, or all printing finished.)

If the status request command is sent during printing, the printer will always send (05H) regardless of the setting.

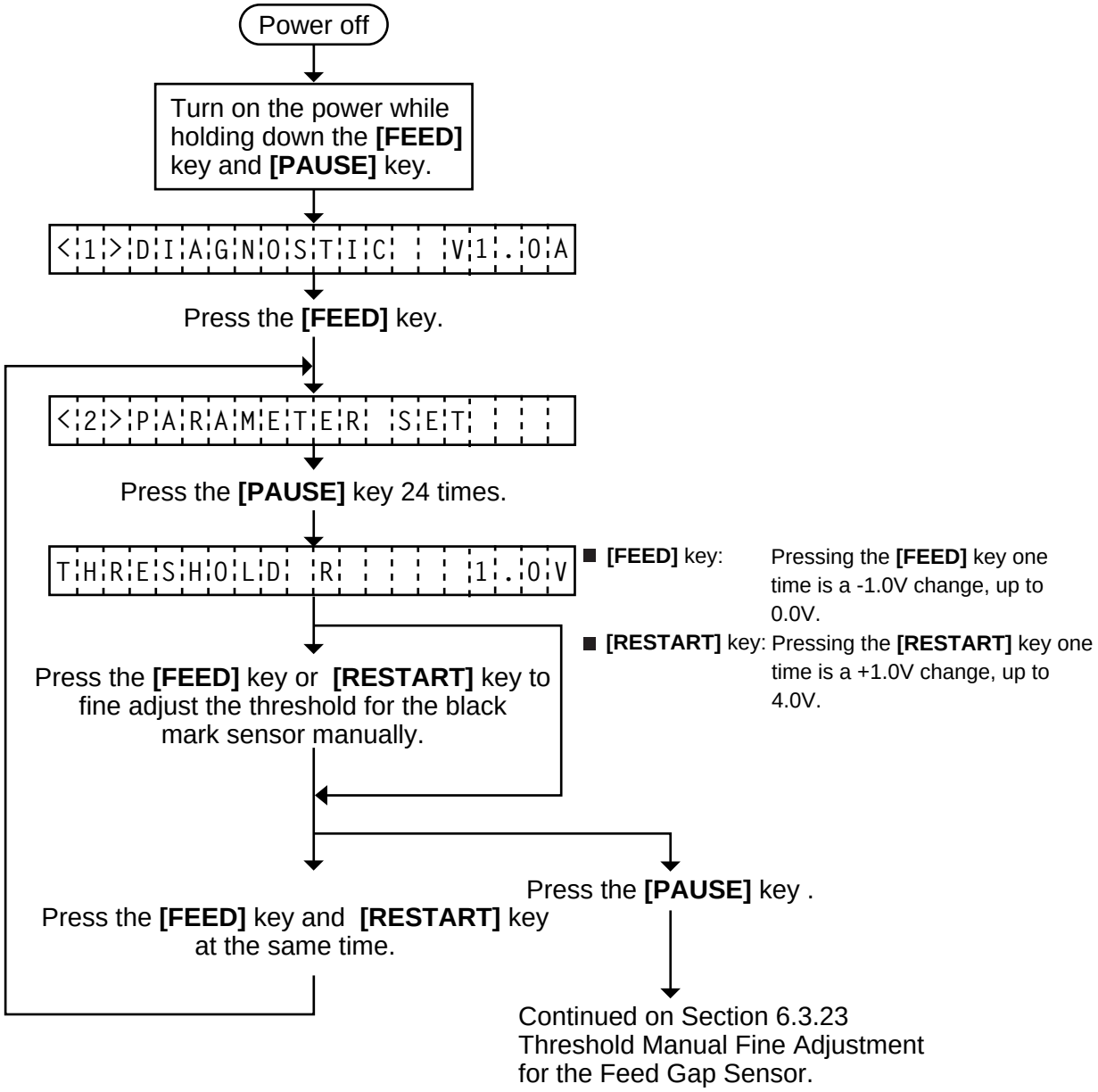
6.3.21 FEED Key Function Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 23 times.
FEED KEY FEED
Select Feed key Function with the [FEED] key or [RESTART] key. (See NOTE 1.)
Press the [FEED] and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.22 Threshold Manual Fine Adjustment for the Black Mark Sensor.
FEED: feeds a piece of paper
PRINT: prints image buffer on a piece of paper.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed data length is stored in memory by pressing the **[PAUSE]** key.*

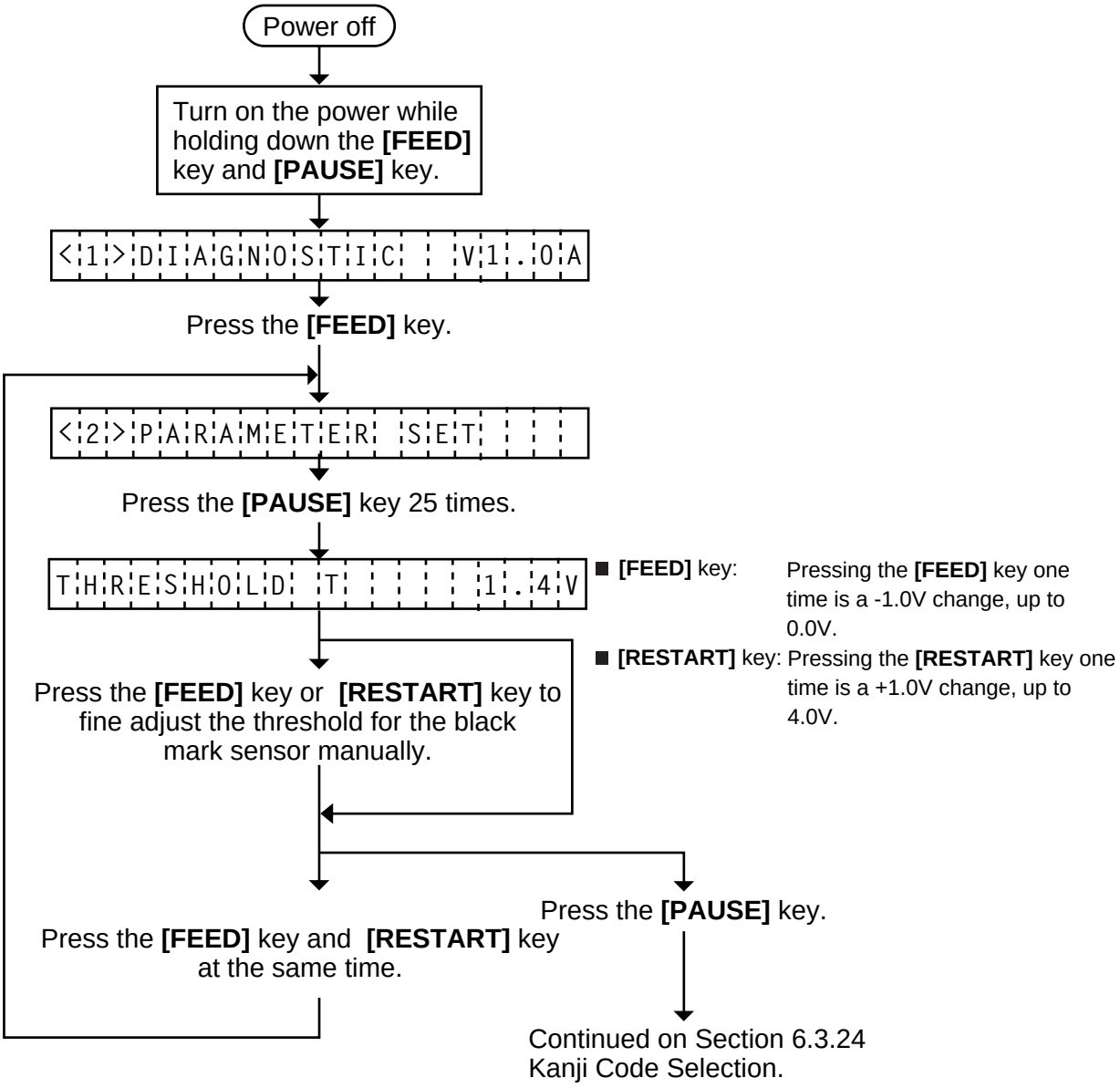
6.3.22 Threshold Manual Fine Adjustment for the Black Mark Sensor


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 24 times.
THRESHOLD R 1.0V
■ [FEED] key: Pressing the [FEED] key one time is a -1.0V change, up to 0.0V.
■ [RESTART] key: Pressing the [RESTART] key one time is a +1.0V change, up to 4.0V.
Press the [FEED] key or [RESTART] key to fine adjust the threshold for the black mark sensor manually.
Press the [PAUSE] key .
Press the [FEED] key and [RESTART] key at the same time.
Continued on Section 6.3.23 Threshold Manual Fine Adjustment for the Feed Gap Sensor.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed threshold fine adjustment value is stored in memory by pressing the **[PAUSE]** key.*

6.3.23 Threshold Manual Fine Adjustment for the Feed Gap Sensor


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 25 times.
THRESHOLD T 1.4V
■ [FEED] key: Pressing the [FEED] key one time is a -1.0V change, up to 0.0V.
■ [RESTART] key: Pressing the [RESTART] key one time is a +1.0V change, up to 4.0V.
Press the [FEED] key or [RESTART] key to fine adjust the threshold for the black mark sensor manually.
Press the [PAUSE] key.
Press the [FEED] key and [RESTART] key at the same time.
Continued on Section 6.3.24 Kanji Code Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed threshold fine adjustment value is stored in memory by pressing the **[PAUSE]** key.*

- **How to Calculate Threshold Fine Adjustment Value**

If the following cases occurred, threshold value for the paper sensors should be fine adjusted after referring to the next page.

Case 1:

When using tag paper, the black mark and the print area are distinguished from each other by the 1.5V or more difference of sensor output voltage. If a low-sensitive sensor is installed in the printer, it may not detect 1.5V or more difference between the black mark and the print area. This may cause the printer to feed over one and a half tags, and then stop with “PAPER JAM” displayed.

Case 2:

The presence and lack of label are distinguished from each other by the reflective sensor voltage. When the voltage is more than 1.5V, it is regarded as the presence of paper. And less than 1.5V is regarded as the paper end. If a low-sensitive-sensor is used, 1.5V or more may not be detected at the backing paper since the reflectance of backing paper is low. In such case, more than 5mm-long gap is regarded as the no paper. And trying to print or feed the label when the sensor stops at the gap results in a NO PAPER error. This problem tends to occur when using labels with thin backing paper.

Case 3:

If the reflective sensor’s output voltage when detecting no paper is 1.5V or more, the sensor does not recognize the actual paper end during printing. Accordingly, the printer continues to print despite of the paper end. This problem may occur on printers of which the resistors on the CPU PCB have been changed according to the Technical Information #SVM7A1010/1 (issued on April 16, 1997).

Case 4:

When using perforated fanfold labels, the transmissive sensor mistakes the perforation on the gap for a print area, resulting in a PAPER JAM error.

Case 5:

When using such a particular label stock that a black mark is printed on every two or three gaps, the sensor detects three different voltages at the label, unmarked gap and black mark, respectively. The sensor cannot distinguish the unmarked gap from the black mark, so the printer stops with displaying “PAPER JAM”.

NOTE: *The following operation cannot be performed unless the sensor type is changed by the issue command or feed command.*

(1) Using the sensor adjustment in Diag. mode, measure the sensor voltage at the following four points.

Label: Print area Backing paper
Tag paper: Print area Black mark
Example:

[REFLECTIVE] 2.8V
[TRANSMISSIVE] 4.1V

(2) Using the following formula, calculate the threshold from the measured voltage:

When using labels (transmissive sensor):

Threshold = (Max. voltage at the backing paper) - (Voltage at the print area) - 0.7V

e.g.) 2.0V = 4.2V - 1.5V - 0.7V

When using perforated labels (transmissive sensor):

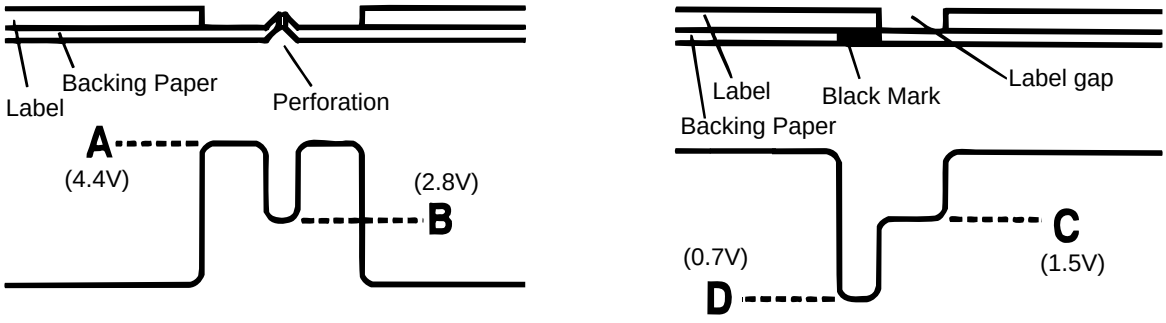
$$\text{Threshold} = \text{(Max. voltage at the backing paper)}_{\text{Ⓐ}} - \frac{\text{Min. voltage at the backing paper}_{\text{Ⓑ}}}{2} - \frac{\text{Min. voltage at the backing paper}_{\text{Ⓐ}}}{2}$$

e.g.) 2.2V = 4.4V - (2.8V/2) - (1.6V/2)

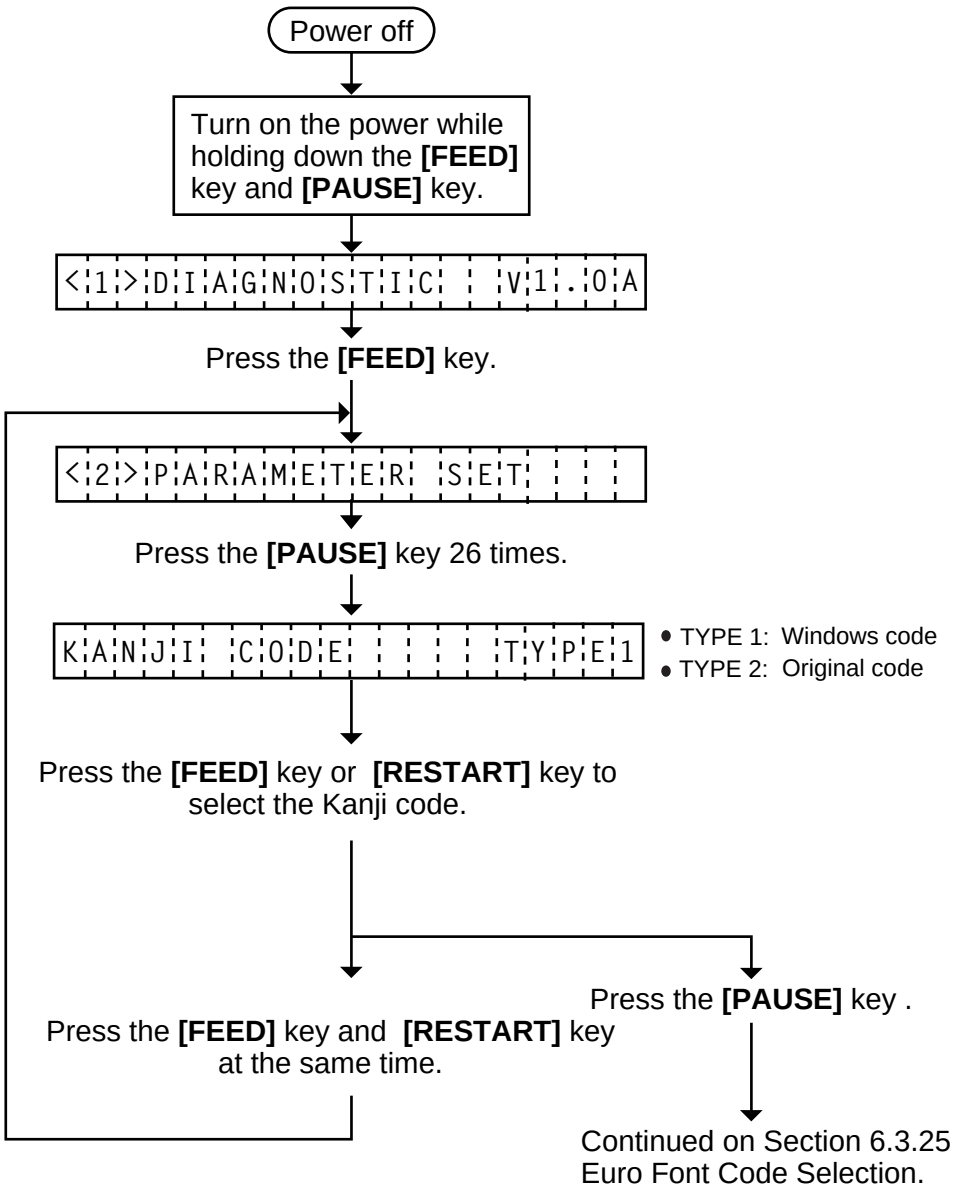
When using labels with black marks (reflective sensor):

$$\text{Threshold} = \frac{\text{(Min. voltage at the print area)}_{\text{Ⓒ}} - \text{(Min. voltage at the black mark)}_{\text{Ⓓ}}}{2}$$

e.g.) 0.4V = (1.5V - 0.7V)/2



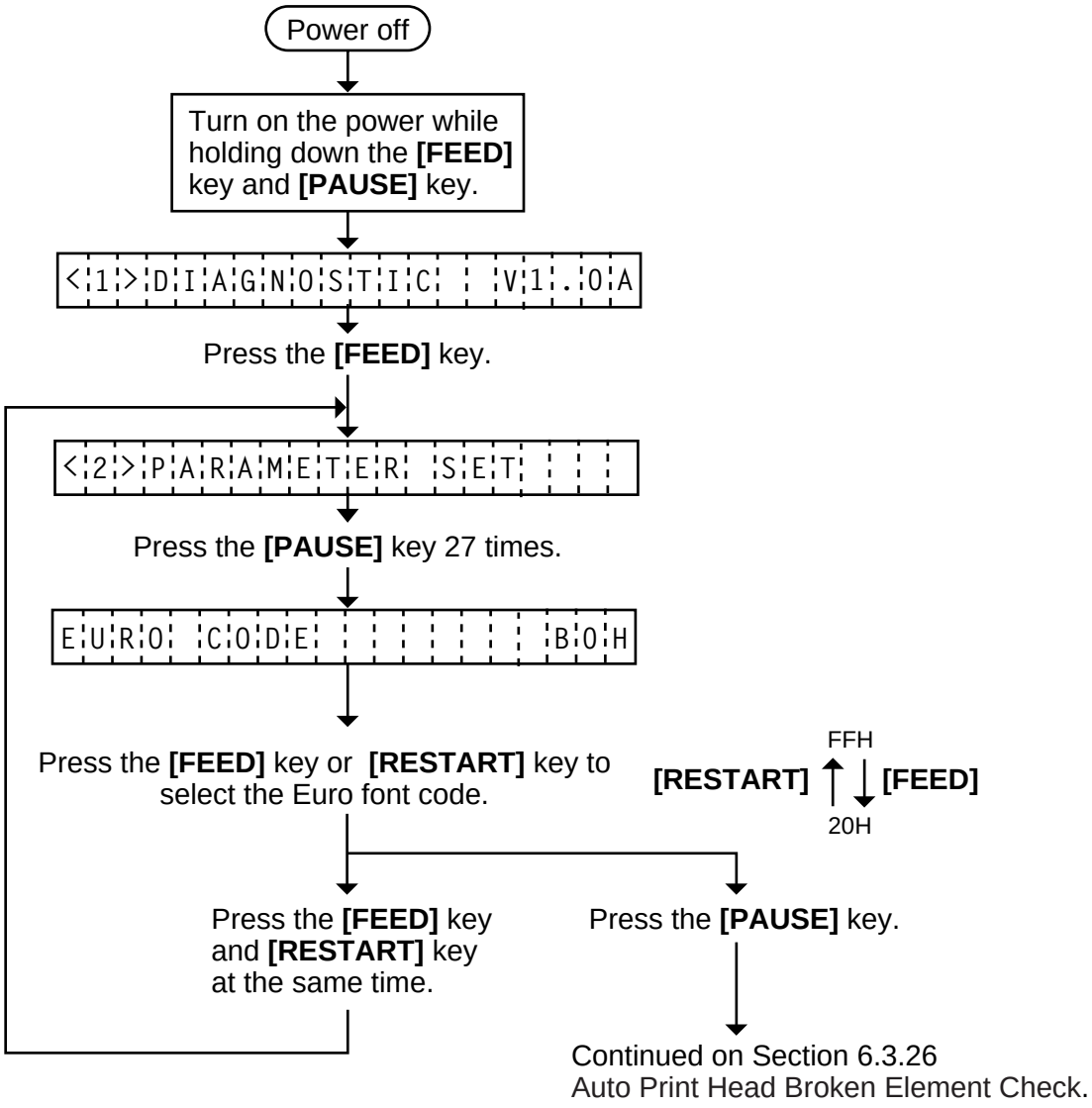
6.3.24 Kanji Code Selection


Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.0A
Press the **[FEED]** key.
<2>PARAMETER SET
Press the **[PAUSE]** key 26 times.
KANJI CODE TYPE1
• TYPE 1: Windows code
• TYPE 2: Original code
Press the **[FEED]** key or **[RESTART]** key to select the Kanji code.
Press the **[FEED]** key and **[RESTART]** key at the same time.
Press the **[PAUSE]** key .
Continued on Section 6.3.25 Euro Font Code Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed Kanji code is stored in memory by pressing the **[PAUSE]** key.*

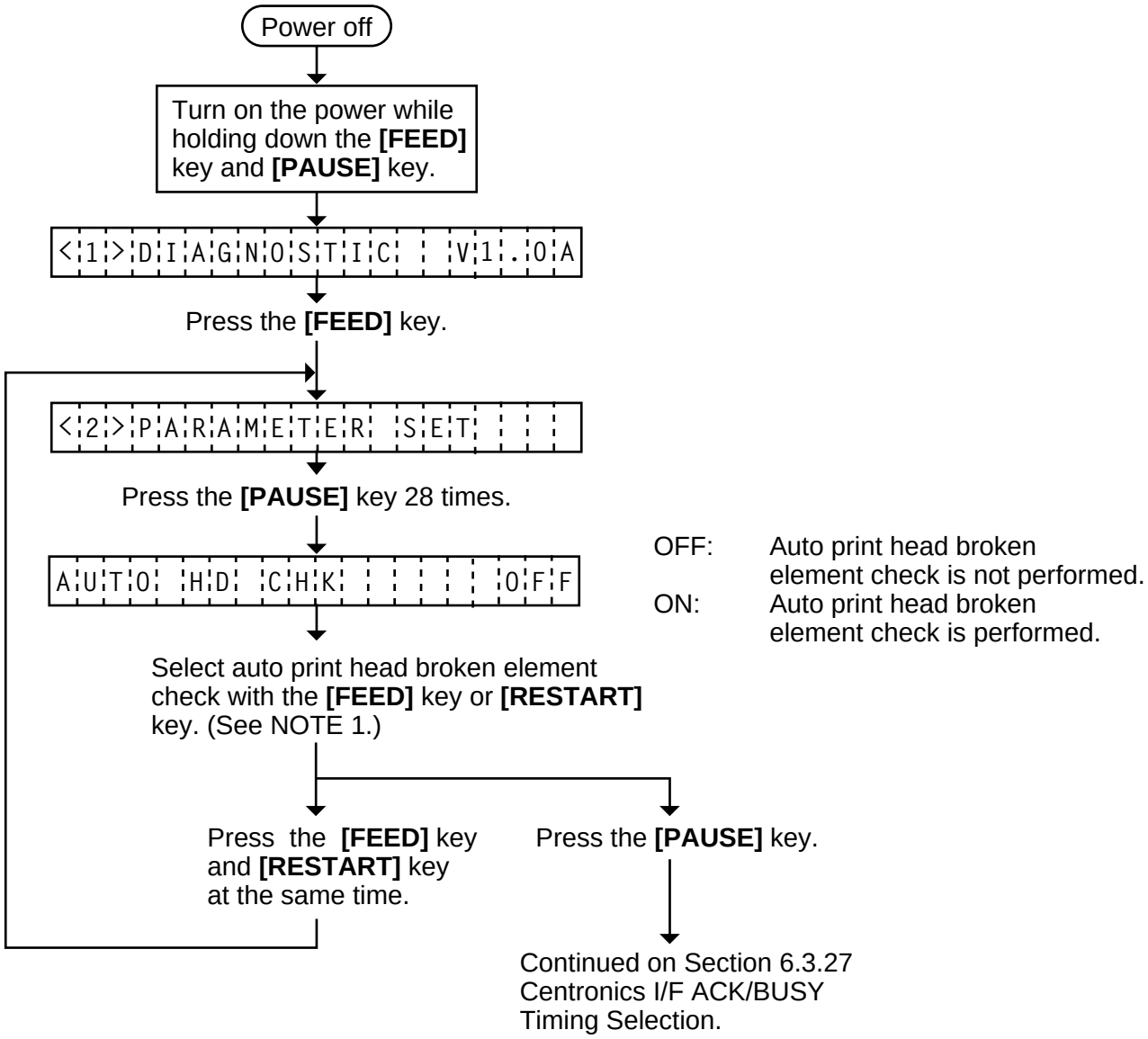
6.3.25 Euro Font Code Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 27 times.
EURO CODE BOH
Press the [FEED] key or [RESTART] key to select the Euro font code.
FFH
[RESTART]
[FEED]
20H
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.26
Auto Print Head Broken Element Check.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed Euro font code is stored in memory by pressing the **[PAUSE]** key.*

6.3.26 Auto Print Head Broken Element Check

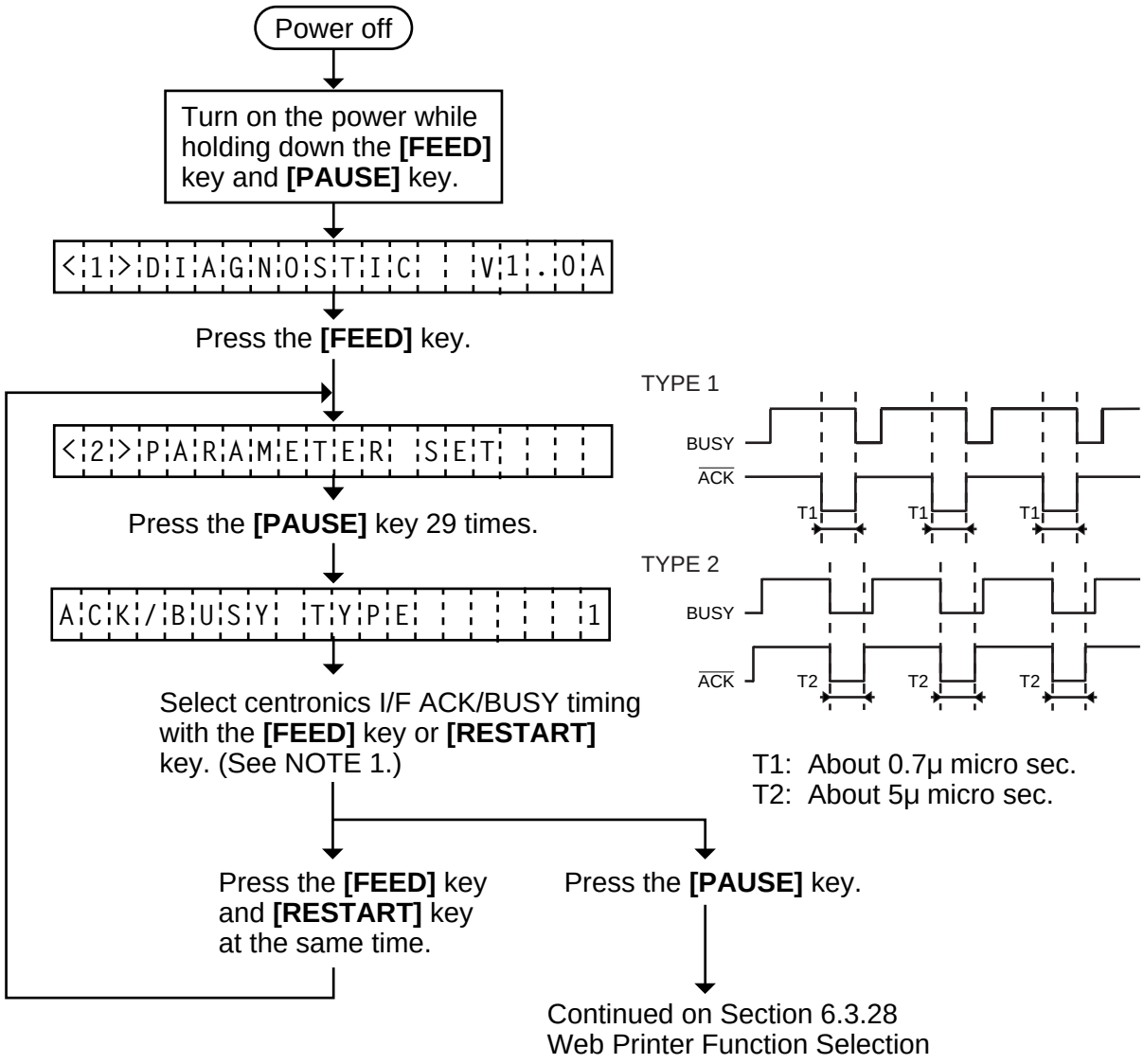

Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 28 times.
AUTO HD CHK OFF
Select auto print head broken element check with the [FEED] key or [RESTART] key. (See NOTE 1.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.27 Centronics I/F ACK/BUSY Timing Selection.
OFF: Auto print head broken element check is not performed.
ON: Auto print head broken element check is performed.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed data length is stored in memory by pressing the **[PAUSE]** key.*

6.3.27 Centronics I/F ACK/BUSY Timing Selection

Choose the ACK/BUSY timing type 1 or type 2.

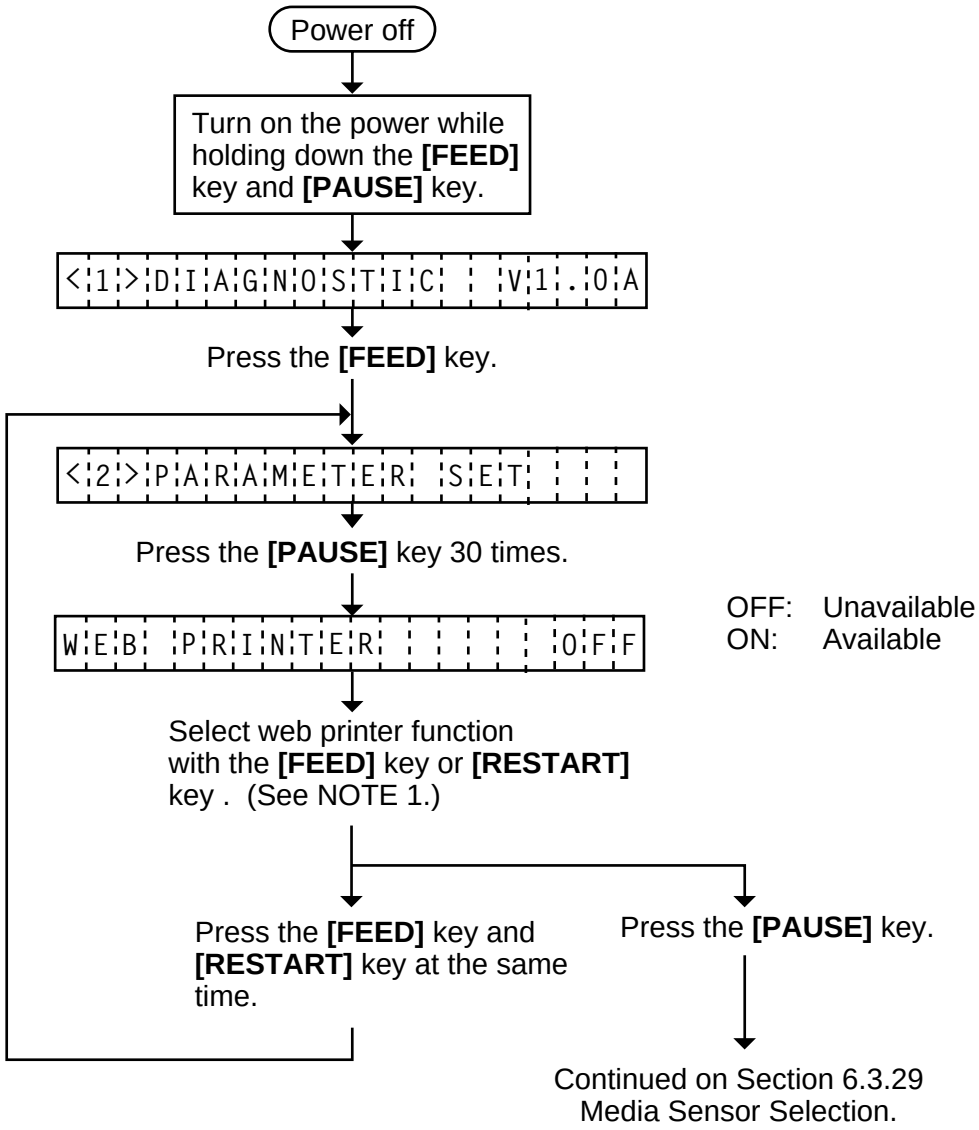

Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 29 times.
ACK/BUSY TYPE 1
Select centronics I/F ACK/BUSY timing with the [FEED] key or [RESTART] key. (See NOTE 1.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.28 Web Printer Function Selection
TYPE 1
BUSY
ACK
T1
TYPE 2
BUSY
ACK
T2
T1: About 0.7µ micro sec.
T2: About 5µ micro sec.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed data length is stored in memory by pressing the **[PAUSE]** key.*

3. Select type1 when using ECP + DMA mode.

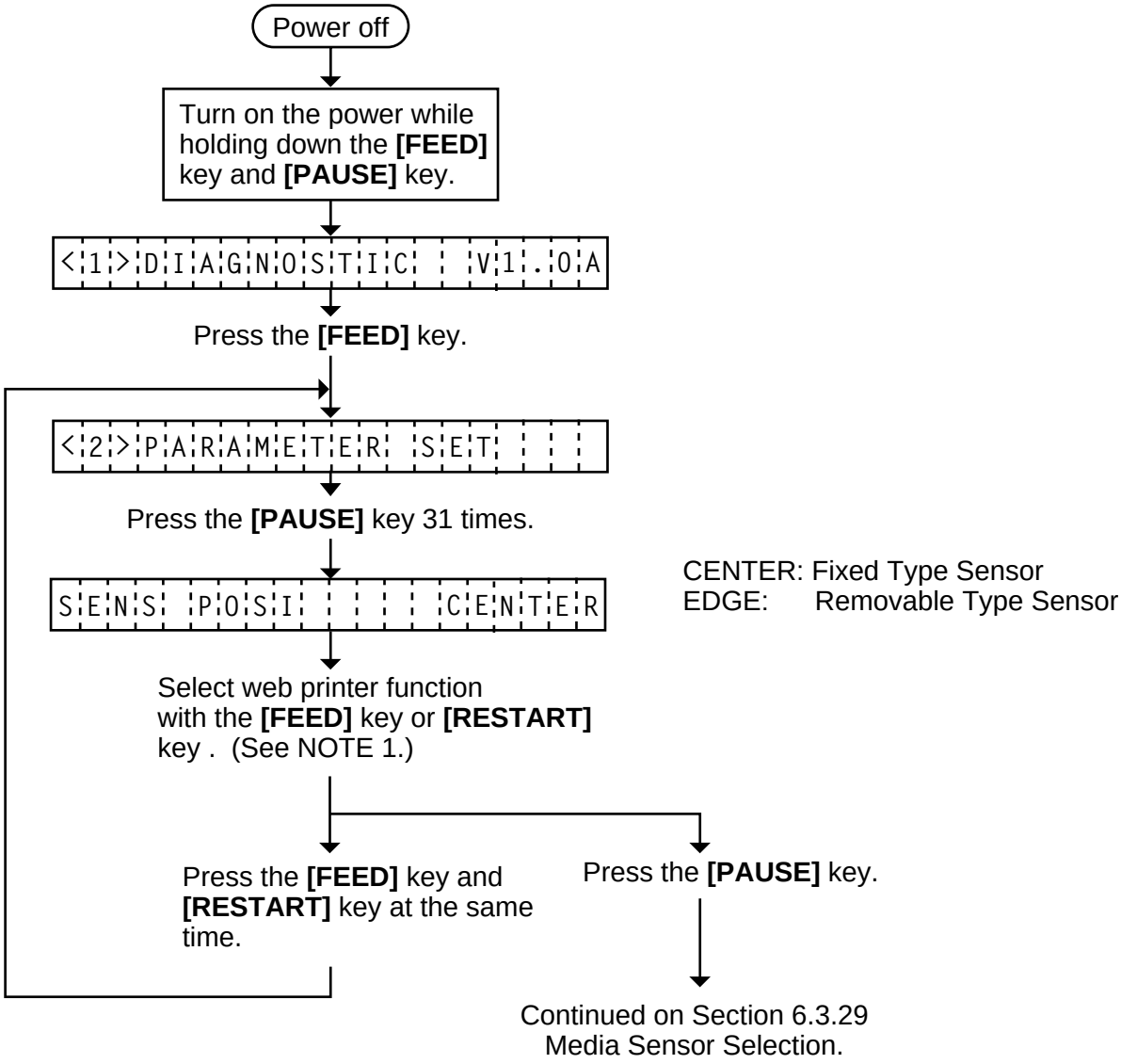
6.3.28 Web Printer Function Selection


Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.0A
Press the **[FEED]** key.
<2>PARAMETER SET
Press the **[PAUSE]** key 30 times.
WEB PRINTER OFF
OFF: Unavailable
ON: Available
Select web printer function with the **[FEED]** key or **[RESTART]** key . (See NOTE 1.)
Press the **[FEED]** key and **[RESTART]** key at the same time.
Press the **[PAUSE]** key.
Continued on Section 6.3.29 Media Sensor Selection.

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed Euro font code is stored in memory by pressing the **[PAUSE]** key.*

6.3.29 Media Sensor Selection


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key.
<2>PARAMETER SET
Press the [PAUSE] key 31 times.
SENS POSI CENTER
Select web printer function with the [FEED] key or [RESTART] key . (See NOTE 1.)
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
Continued on Section 6.3.29 Media Sensor Selection.
CENTER: Fixed Type Sensor
EDGE: Removable Type Sensor

NOTES: *1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*2. A changed Euro font code is stored in memory by pressing the **[PAUSE]** key.*

6.4 TEST PRINT MODE

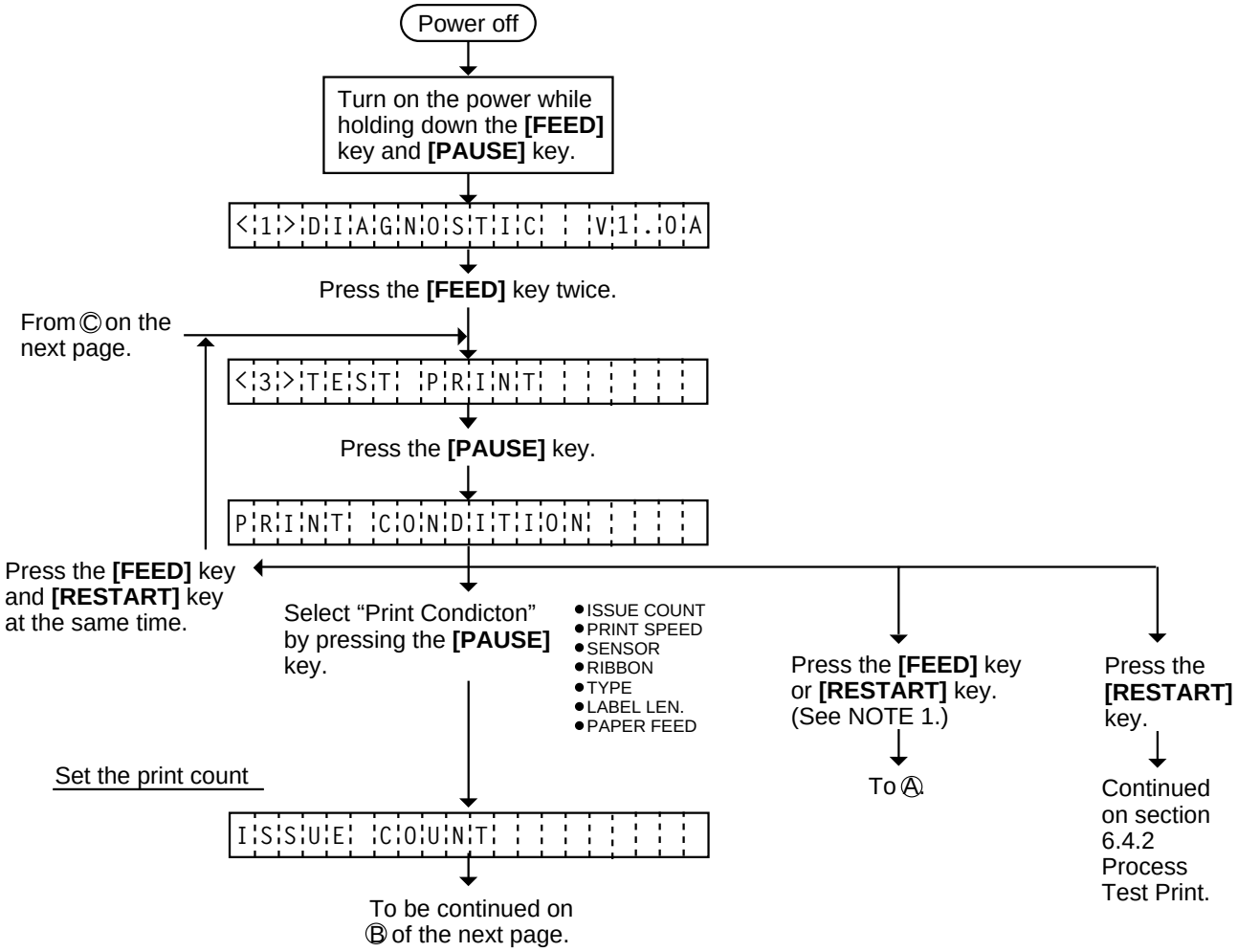
Test print mode contains normal test print and process test print.

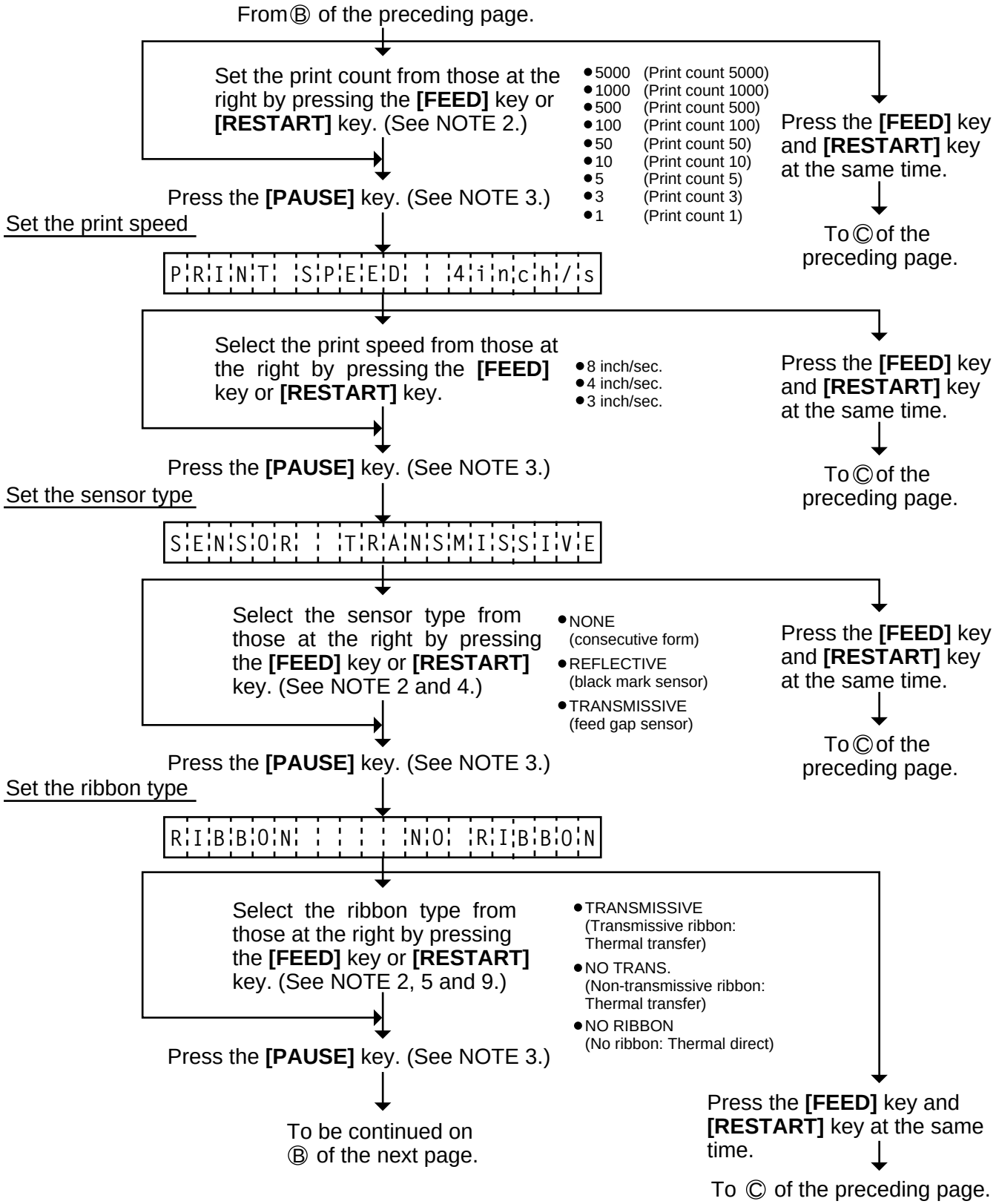
6.4.1 Normal Test Print

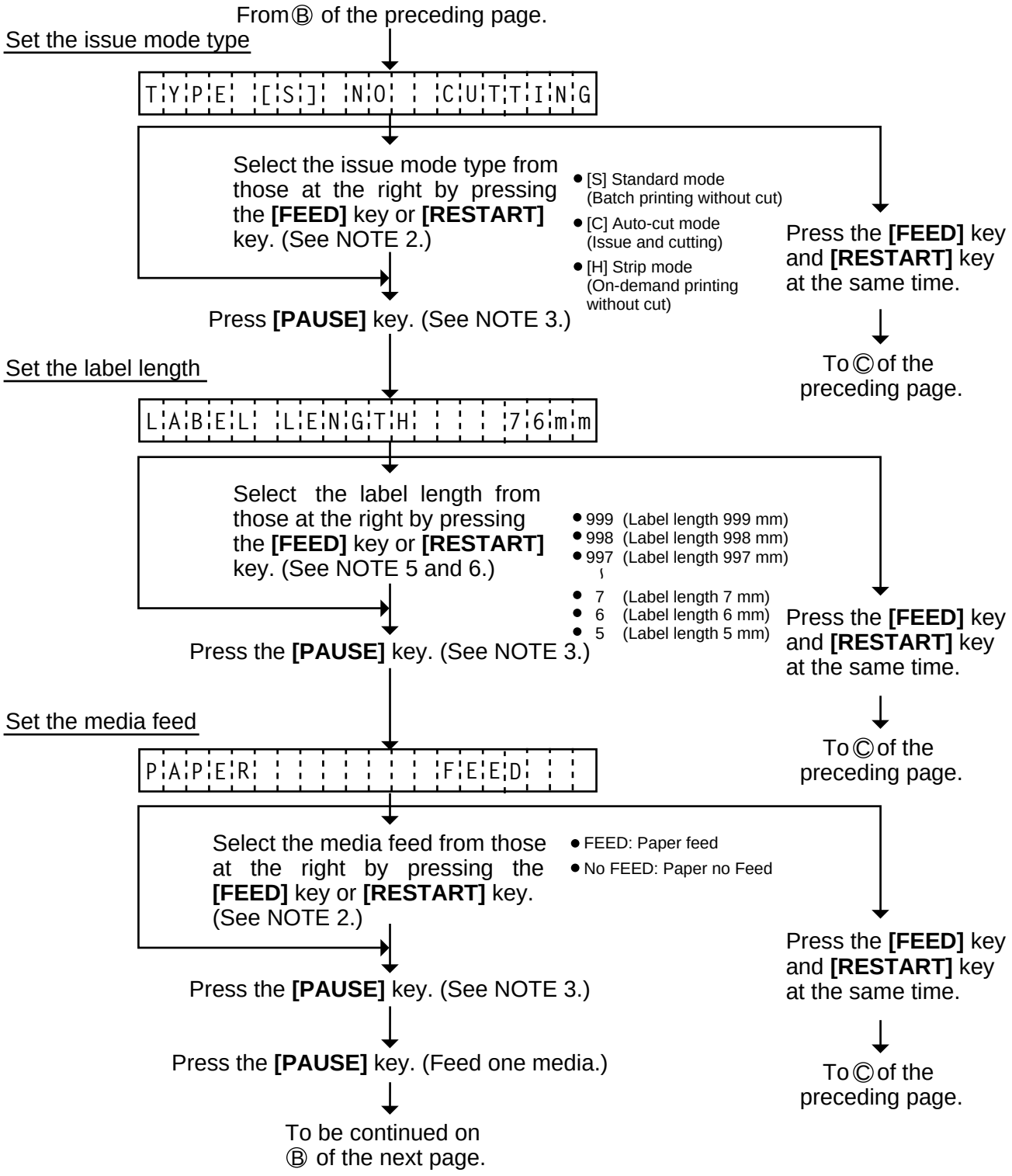
Eight kinds of test prints are provided in the test print mode. When performing the test print, 7 parameters should be set. The default parameter at power on is as below:

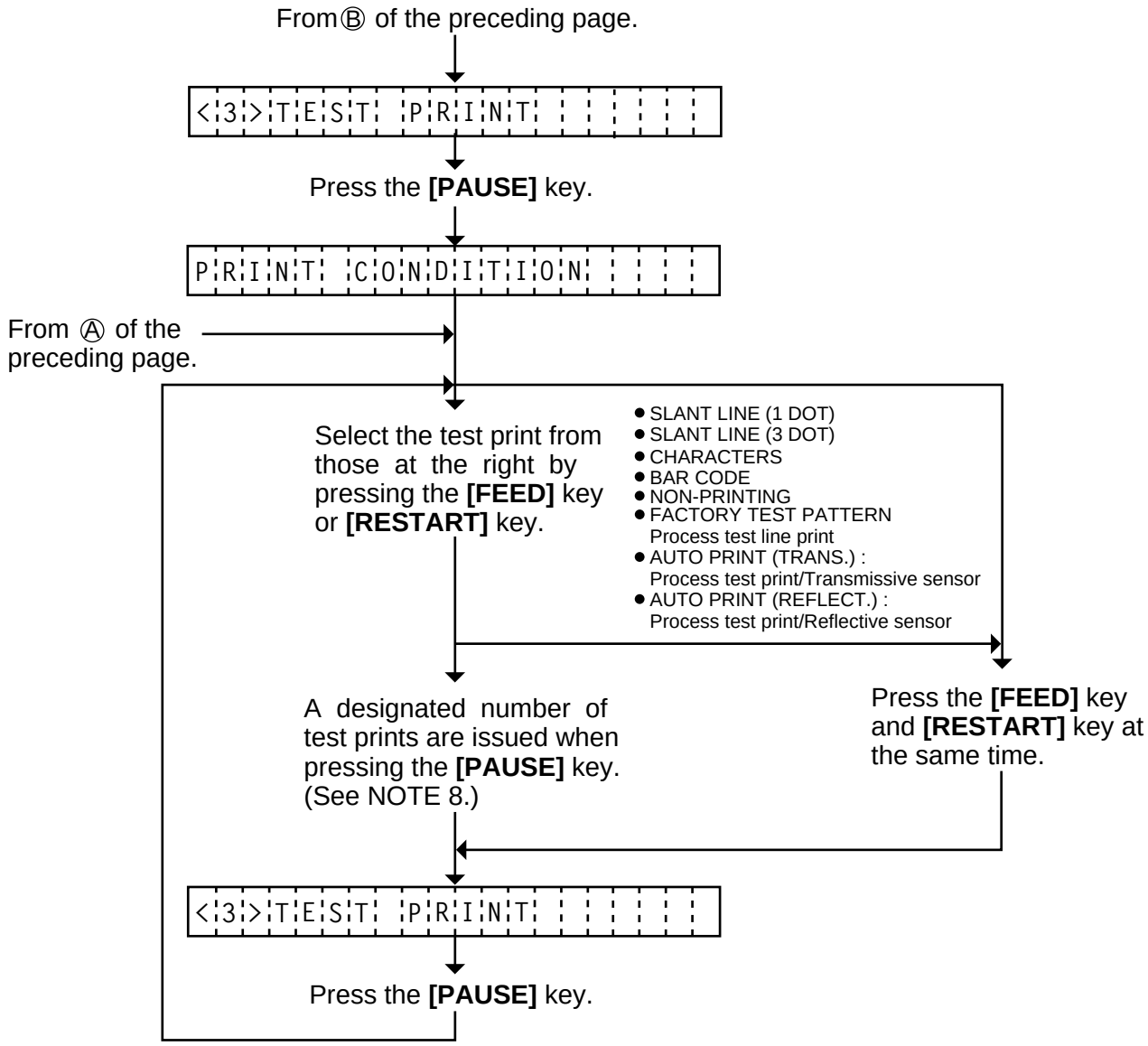
- ISSUE COUNT : 1
- PRINT SPEED : 4"/sec.
- SENSOR : Transmissive sensor
- PRINT TYPE : Thermal Transfer
- TYPE : Batch (without cut)
- LABEL LENGTH : 76 mm
- PAPER FEED : Feed

Operating procedure for the test mode is provided below.


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key twice.
From Ⓒ on the next page.
<3>TEST PRINT
Press the [PAUSE] key.
PRINT CONDITION
Press the [FEED] key and [RESTART] key at the same time.
Select "Print Condicton" by pressing the [PAUSE] key.
●ISSUE COUNT
●PRINT SPEED
●SENSOR
●RIBBON
●TYPE
●LABEL LEN.
●PAPER FEED
Press the [FEED] key or [RESTART] key. (See NOTE 1.)
To Ⓐ
Press the [RESTART] key.
Continued on section 6.4.2 Process Test Print.
Set the print count
ISSUE COUNT
To be continued on Ⓑ of the next page.


From Ⓑ of the preceding page.
Set the print count from those at the right by pressing the **[FEED]** key or **[RESTART]** key. (See NOTE 2.)
● 5000 (Print count 5000)
● 1000 (Print count 1000)
● 500 (Print count 500)
● 100 (Print count 100)
● 50 (Print count 50)
● 10 (Print count 10)
● 5 (Print count 5)
● 3 (Print count 3)
● 1 (Print count 1)
Press the **[FEED]** key and **[RESTART]** key at the same time.
To Ⓒ of the preceding page.
Press the **[PAUSE]** key. (See NOTE 3.)
Set the print speed
PRINT SPEED 4inch/s
Select the print speed from those at the right by pressing the **[FEED]** key or **[RESTART]** key.
● 8 inch/sec.
● 4 inch/sec.
● 3 inch/sec.
Press the **[FEED]** key and **[RESTART]** key at the same time.
To Ⓒ of the preceding page.
Press the **[PAUSE]** key. (See NOTE 3.)
Set the sensor type
SENSOR TRANSMISSIVE
Select the sensor type from those at the right by pressing the **[FEED]** key or **[RESTART]** key. (See NOTE 2 and 4.)
● NONE (consecutive form)
● REFLECTIVE (black mark sensor)
● TRANSMISSIVE (feed gap sensor)
Press the **[FEED]** key and **[RESTART]** key at the same time.
To Ⓒ of the preceding page.
Press the **[PAUSE]** key. (See NOTE 3.)
Set the ribbon type
RIBBON NO RIBBON
Select the ribbon type from those at the right by pressing the **[FEED]** key or **[RESTART]** key. (See NOTE 2, 5 and 9.)
● TRANSMISSIVE (Transmissive ribbon: Thermal transfer)
● NO TRANS. (Non-transmissive ribbon: Thermal transfer)
● NO RIBBON (No ribbon: Thermal direct)
Press the **[FEED]** key and **[RESTART]** key at the same time.
To Ⓒ of the preceding page.
Press the **[PAUSE]** key. (See NOTE 3.)
To be continued on Ⓑ of the next page.


From Ⓑ of the preceding page.
Set the issue mode type
TYPE [S] NO CUTTING
Select the issue mode type from those at the right by pressing the **[FEED]** key or **[RESTART]** key. (See NOTE 2.)
● [S] Standard mode (Batch printing without cut)
● [C] Auto-cut mode (Issue and cutting)
● [H] Strip mode (On-demand printing without cut)
Press the **[FEED]** key and **[RESTART]** key at the same time.
To Ⓒ of the preceding page.
Press **[PAUSE]** key. (See NOTE 3.)
Set the label length
LABEL LENGTH 76mm
Select the label length from those at the right by pressing the **[FEED]** key or **[RESTART]** key. (See NOTE 5 and 6.)
● 999 (Label length 999 mm)
● 998 (Label length 998 mm)
● 997 (Label length 997 mm)
● 7 (Label length 7 mm)
● 6 (Label length 6 mm)
● 5 (Label length 5 mm)
Press the **[FEED]** key and **[RESTART]** key at the same time.
To Ⓒ of the preceding page.
Press the **[PAUSE]** key. (See NOTE 3.)
Set the media feed
PAPER FEED
Select the media feed from those at the right by pressing the **[FEED]** key or **[RESTART]** key. (See NOTE 2.)
● FEED: Paper feed
● No FEED: Paper no Feed
Press the **[FEED]** key and **[RESTART]** key at the same time.
To Ⓒ of the preceding page.
Press the **[PAUSE]** key. (See NOTE 3.)
Press the **[PAUSE]** key. (Feed one media.)
To be continued on Ⓑ of the next page.


From Ⓑ of the preceding page.
<3>TEST PRINT
Press the [PAUSE] key.
PRINT CONDITION
From Ⓐ of the preceding page.
Select the test print from those at the right by pressing the [FEED] key or [RESTART] key.
● SLANT LINE (1 DOT)
● SLANT LINE (3 DOT)
● CHARACTERS
● BAR CODE
● NON-PRINTING
● FACTORY TEST PATTERN
Process test line print
● AUTO PRINT (TRANS.) :
Process test print/Transmissive sensor
● AUTO PRINT (REFLECT.) :
Process test print/Reflective sensor
A designated number of test prints are issued when pressing the [PAUSE] key. (See NOTE 8.)
Press the [FEED] key and [RESTART] key at the same time.
<3>TEST PRINT
Press the [PAUSE] key.

NOTES: *1. When there is no change to the print condition, select one of the test print options to issue the test print.*

*2. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.*

*3. A selected print condition is activated when the **[PAUSE]** key is pressed.*

4. When the feed gap sensor is selected, the gap between labels becomes 3mm long.

5. A label size greater than the image buffer length cannot be designated. The image buffer length differs according to memory size. If designated, the printer prints in the image buffer, or the printer stops because of an error.

*6. Pressing the **[FEED]** key changes the label length -1 mm, pressing the **[RESTART]** key changes +1 mm.*

*7. When an error occurs during a test print, the error message is displayed and printing is stopped. The error is cleared by pressing the **[PAUSE]** key and the display shows "<3> TEST PRINT". Printing is not automatically resumed after the error is cleared.*

8. When the space area is 20mm at the print speed of 3"/sec., and 8"/sec., the printer automatically enters ribbon saving print mode. (only when the ribbon saving module is set to ON at the thermal transfer print)

9. *All fine adjustment values except for the X axis fine adjustment are also available at a test print.*
10. *The print speed of 4"/sec. is applied to the thermal direct print only. Even if the print speed of 4"/sec. is selected for the thermal transfer print, the printer performs at 3"/sec..*

■ Test Print Sample

• Slant line (1 dot)

Fig. 6-21

• Slant line (3 dot)

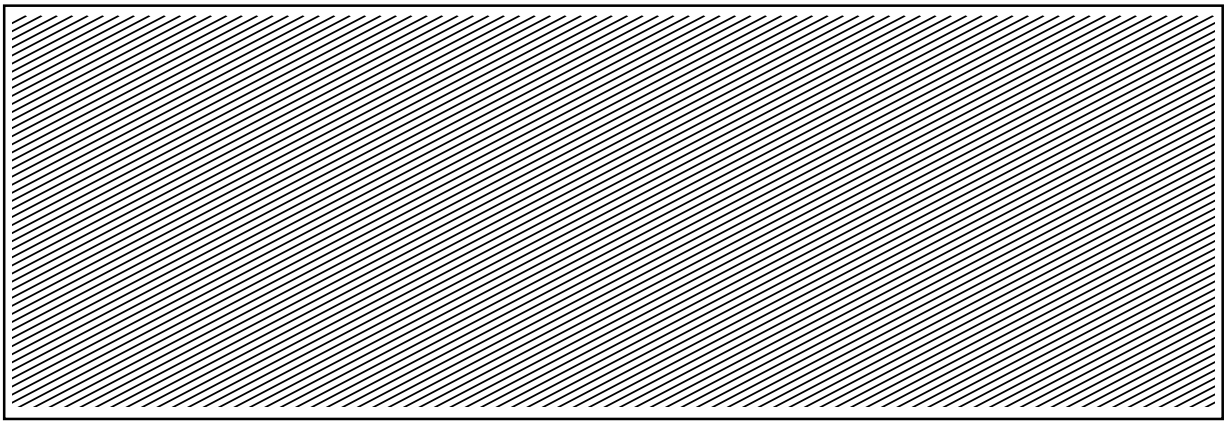


Fig. 6-22

• Cahracters

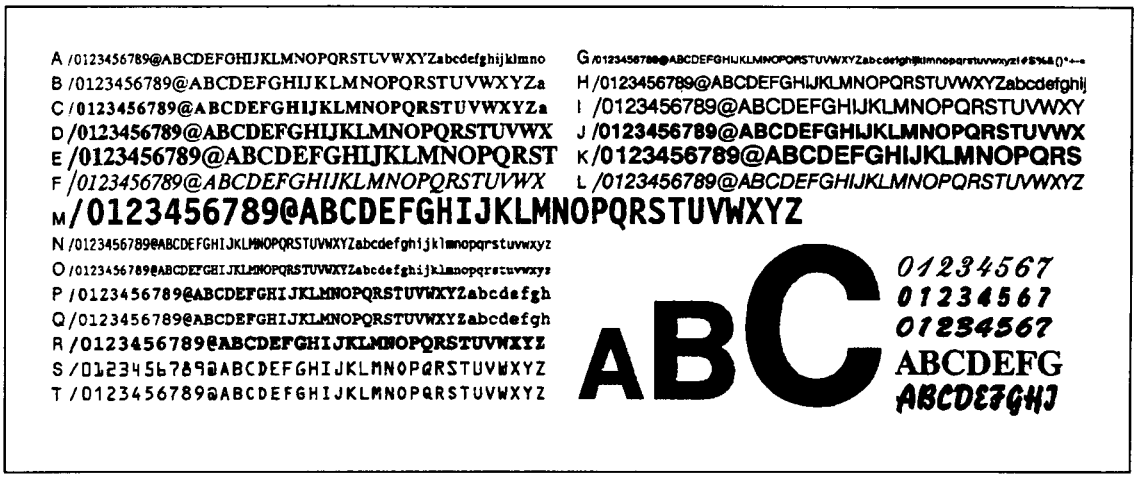


Fig. 6-23

• Bar code

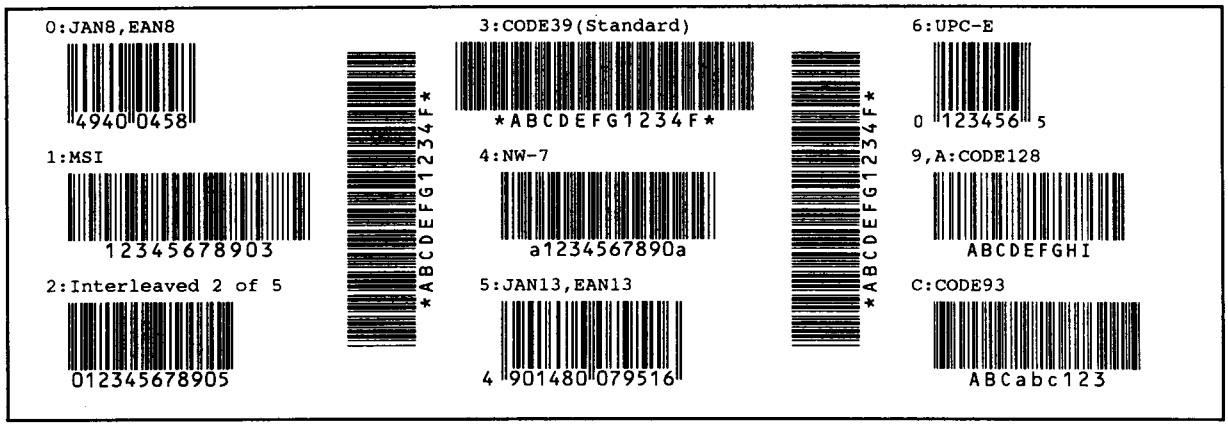


Fig. 6-24

• AUTO PRINT

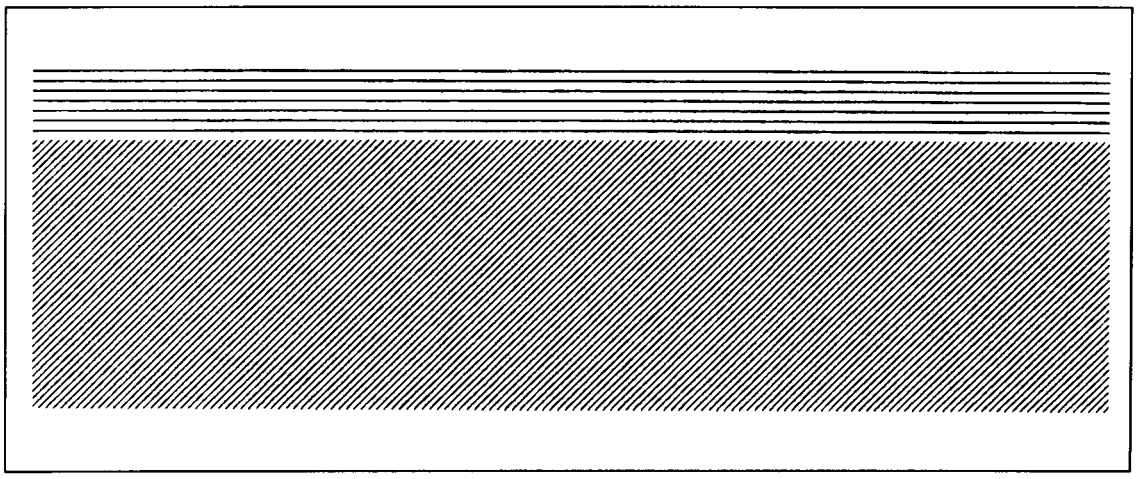


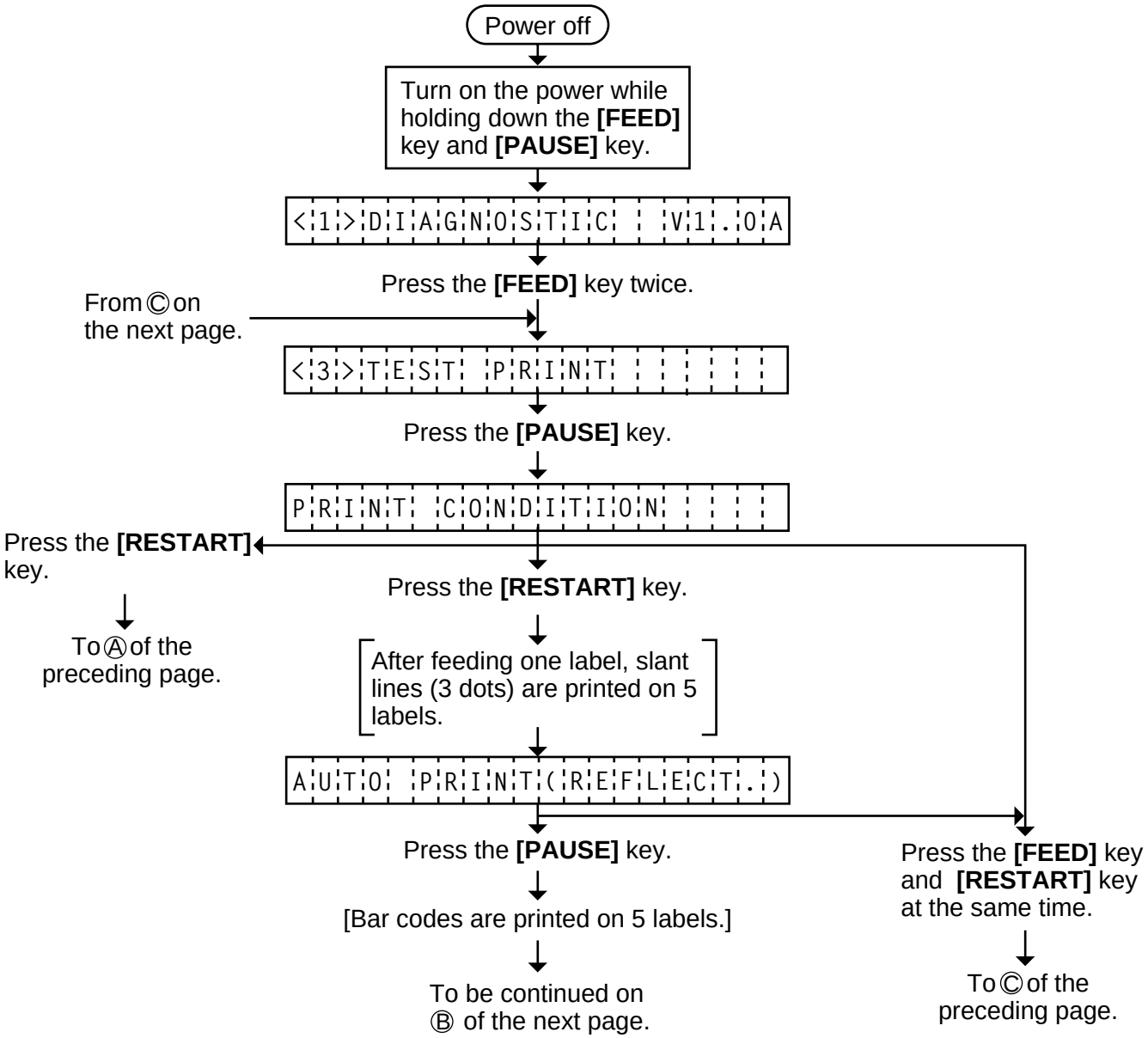
Fig. 6-25

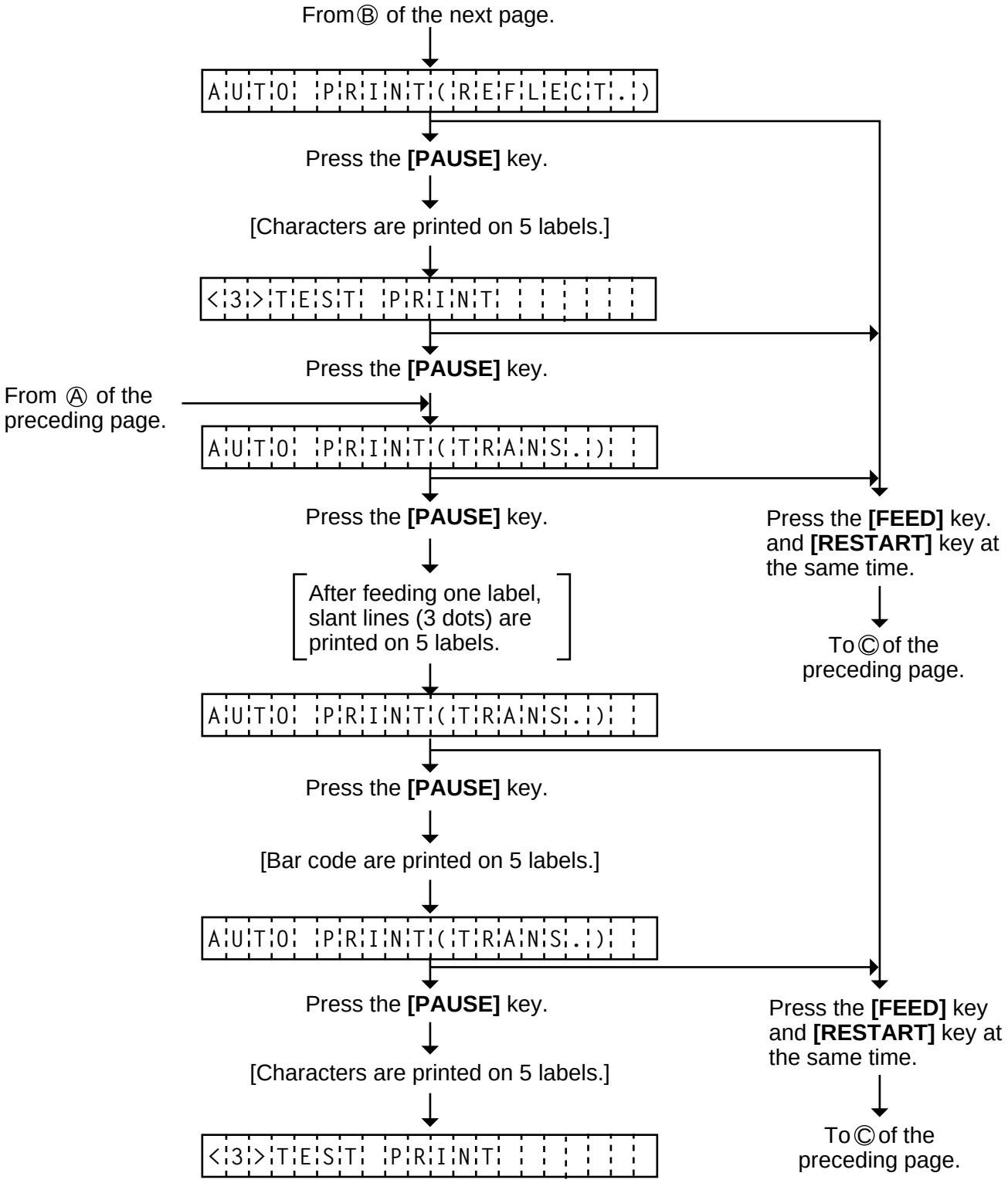
6.4.2 Process Test Print

In the process test print, the test print is automatically performed under the following conditions. Parameter setting and print tone fine adjustment value is ignored.

- OPERATION : One label feed, 3-dot slant line print, bar code print, character print
- ISSUE COUNT : 5 labels each
- PRINT SPEED : 8 inches/sec.
- SENSOR : Transmissive sensor (feed gap sensor) or reflective sensor (black mark sensor)
- RIBBON : Transmissive ribbon
- TYPE : Batch (without cut)
- LABEL LENGTH : 76 mm
- PRINT TONE FINE ADJUSTMENT VALUE :+0

Operating procedure for the test mode is provided below.


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key twice.
From Ⓒ on the next page.
<3>TEST PRINT
Press the [PAUSE] key.
PRINT CONDITION
Press the [RESTART] key.
Press the [RESTART] key.
To Ⓐ of the preceding page.
After feeding one label, slant lines (3 dots) are printed on 5 labels.
AUTO PRINT(REFLECT.)
Press the [PAUSE] key.
[Bar codes are printed on 5 labels.]
To be continued on Ⓑ of the next page.
Press the [FEED] key and [RESTART] key at the same time.
To Ⓒ of the preceding page.

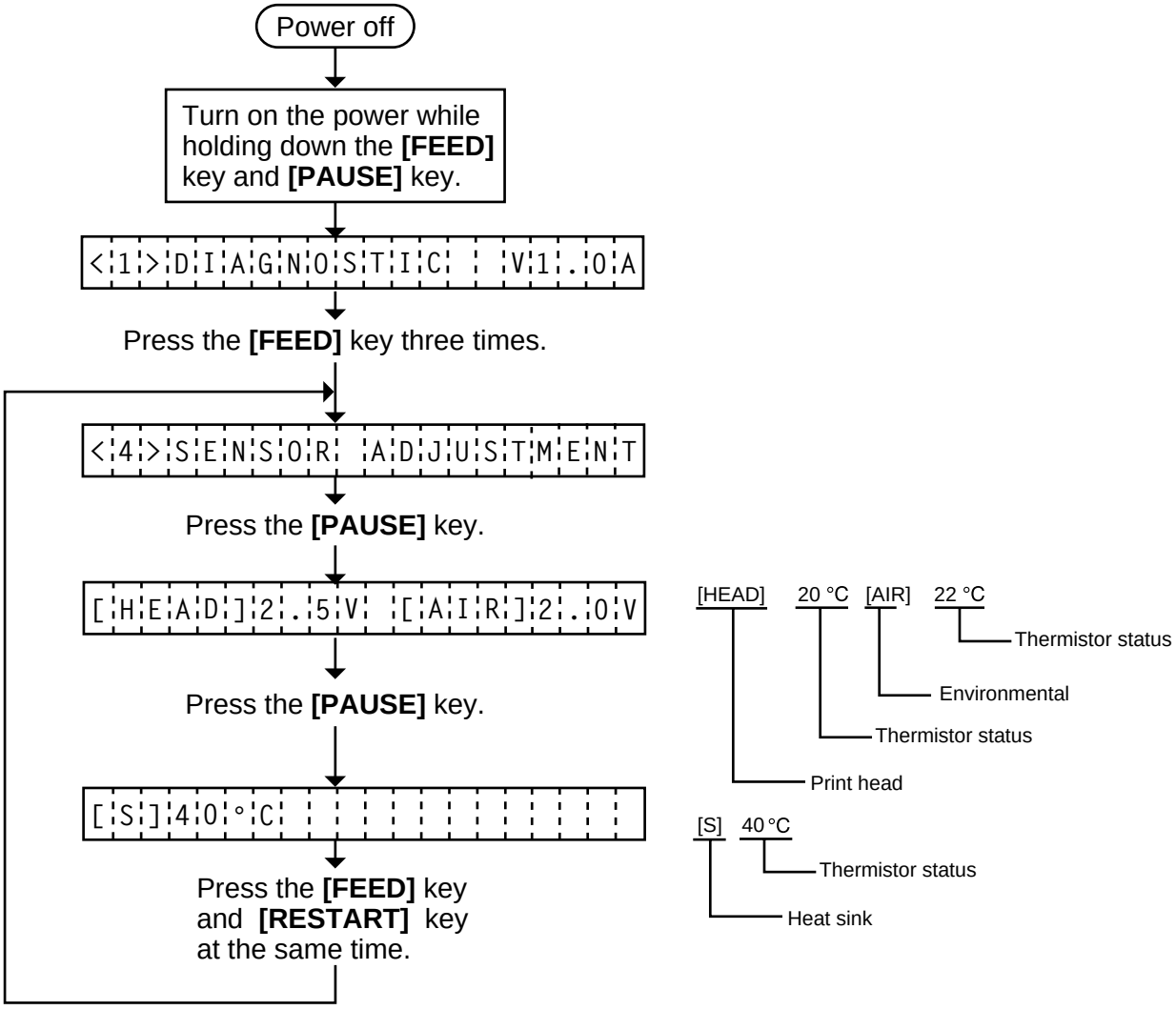

From Ⓑ of the next page.
AUTO PRINT(REFLECT.)
Press the **[PAUSE]** key.
[Characters are printed on 5 labels.]
<3>TEST PRINT
Press the **[PAUSE]** key.
From Ⓐ of the preceding page.
AUTO PRINT(TRANS.)
Press the **[PAUSE]** key.
Press the **[FEED]** key. and **[RESTART]** key at the same time.
To Ⓒ of the preceding page.
After feeding one label, slant lines (3 dots) are printed on 5 labels.
AUTO PRINT(TRANS.)
Press the **[PAUSE]** key.
[Bar code are printed on 5 labels.]
AUTO PRINT(TRANS.)
Press the **[PAUSE]** key.
Press the **[FEED]** key and **[RESTART]** key at the same time.
[Characters are printed on 5 labels.]
To Ⓒ of the preceding page.
<3>TEST PRINT

6.5 SENSOR SETTING MODE

Thermistor check and black mark/feed gap sensor settings are provided in the sensor setting mode. The value set in this mode is printed as data of sensor 2 in Automatic diagnosis printing in self test mode.

6.5.1 Thermistor Check (Read only)

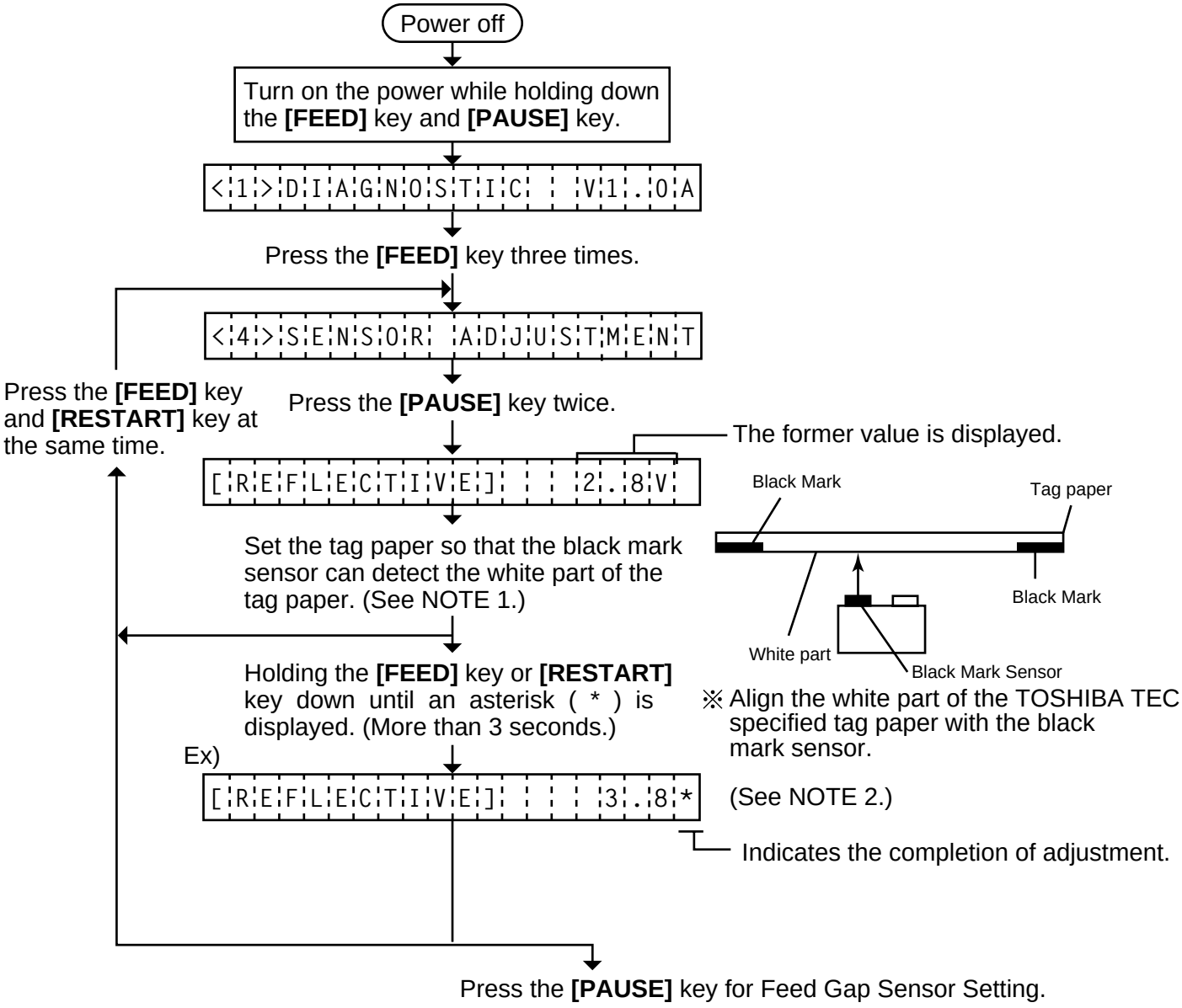
Thermistor check should be performed to check the environmental temperature and print head temperature after the excess head temp. error occurs or batch printing is performed for a long time.



NOTE: *1. Since the thermistor is supervised every 200 ms while displaying the status, the display could vary.*

6.5.2 Black Mark Sensor Adjustment

Black mark sensor setting should be performed after replacing the CPU PC board or changing the tag paper to other maker's one, or when a paper feed error occurs.

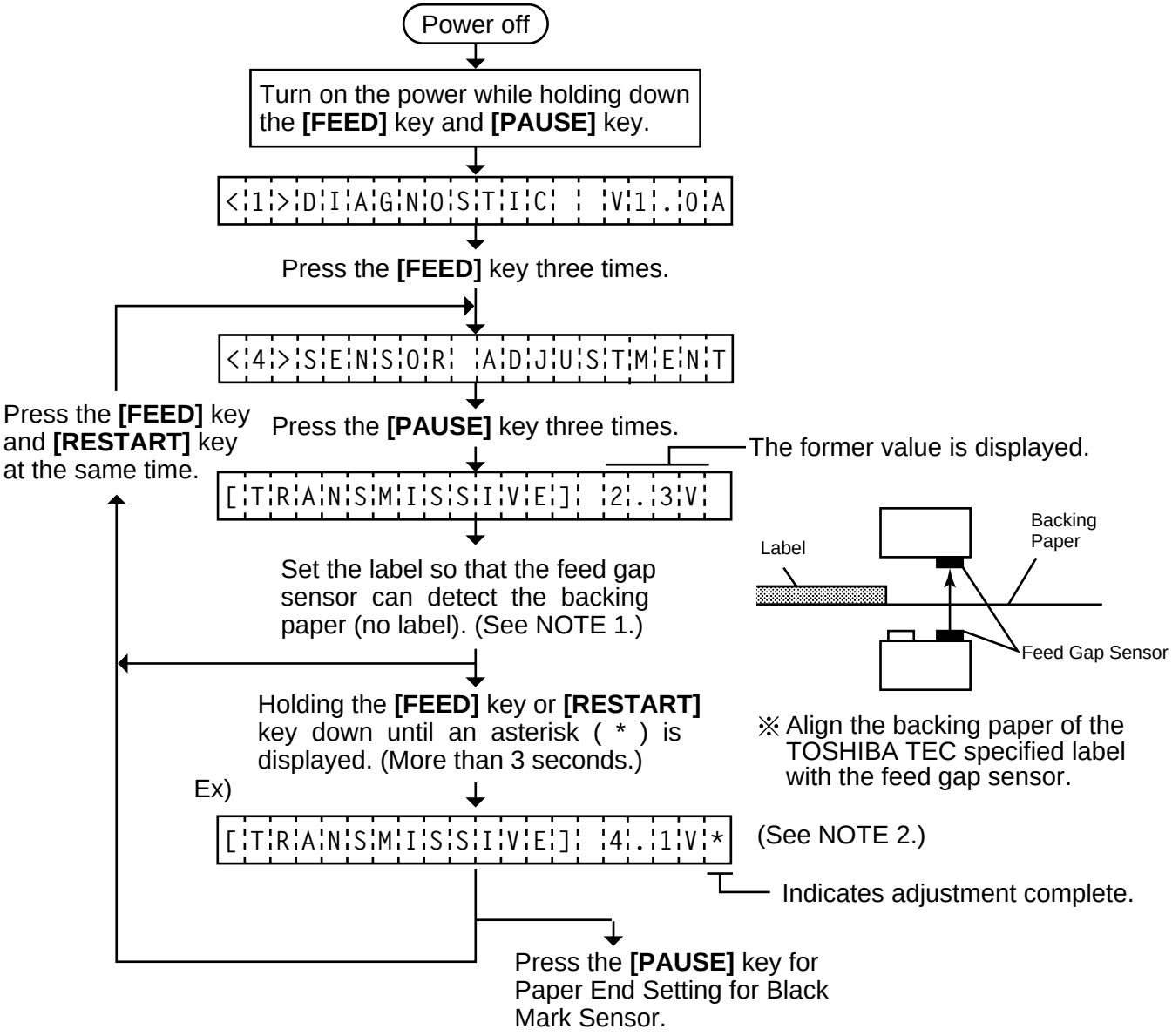

Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.0A
Press the **[FEED]** key three times.
<4>SENSOR ADJUSTMENT
Press the **[FEED]** key and **[RESTART]** key at the same time.
Press the **[PAUSE]** key twice.
The former value is displayed.
[REFLECTIVE] 2.8V
Black Mark
Tag paper
Black Mark
White part
Black Mark Sensor
Set the tag paper so that the black mark sensor can detect the white part of the tag paper. (See NOTE 1.)
Holding the **[FEED]** key or **[RESTART]** key down until an asterisk (*) is displayed. (More than 3 seconds.)
※ Align the white part of the TOSHIBA TEC specified tag paper with the black mark sensor.
Ex)
[REFLECTIVE] 3.8*
(See NOTE 2.)
Indicates the completion of adjustment.
Press the **[PAUSE]** key for Feed Gap Sensor Setting.

NOTES: *1. Make sure to adjust the black mark sensor using the white part of the tag paper as a criterion. Though an adjustment can be performed with the black mark, it may cause a paper jam error.*

*2. Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.*

6.5.3 Feed Gap Sensor Adjustment

Feed gap sensor setting should be performed after replacing the CPU PC board or changing the label to other maker's one, or when a paper feed error occurs.

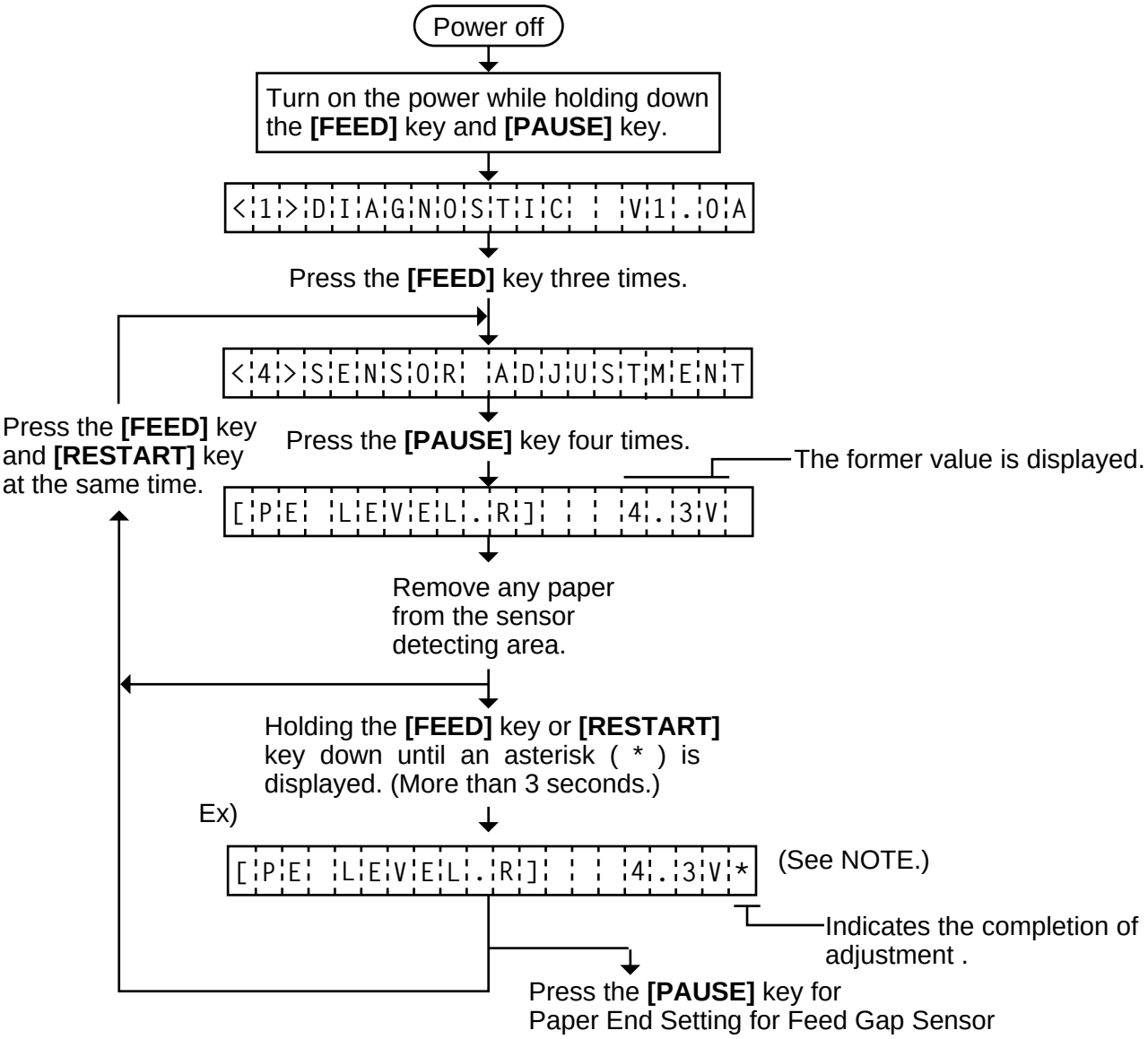

Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.0A
Press the **[FEED]** key three times.
<4>SENSOR ADJUSTMENT
Press the **[FEED]** key and **[RESTART]** key at the same time.
Press the **[PAUSE]** key three times.
The former value is displayed.
[TRANSMISSIVE] 2.3V
Set the label so that the feed gap sensor can detect the backing paper (no label). (See NOTE 1.)
Label
Backing Paper
Feed Gap Sensor
※ Align the backing paper of the TOSHIBA TEC specified label with the feed gap sensor.
Holding the **[FEED]** key or **[RESTART]** key down until an asterisk (*) is displayed. (More than 3 seconds.)
Ex)
[TRANSMISSIVE] 4.1V*
(See NOTE 2.)
Indicates adjustment complete.
Press the **[PAUSE]** key for Paper End Setting for Black Mark Sensor.

NOTES: *1. Make sure to adjust the feed gap sensor using the backing paper with no label as a criterion. Though an adjustment can be performed with the label, it could cause a paper jam error.*

*2. Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.*

6.5.4 Paper End Setting for Black Mark Sensor

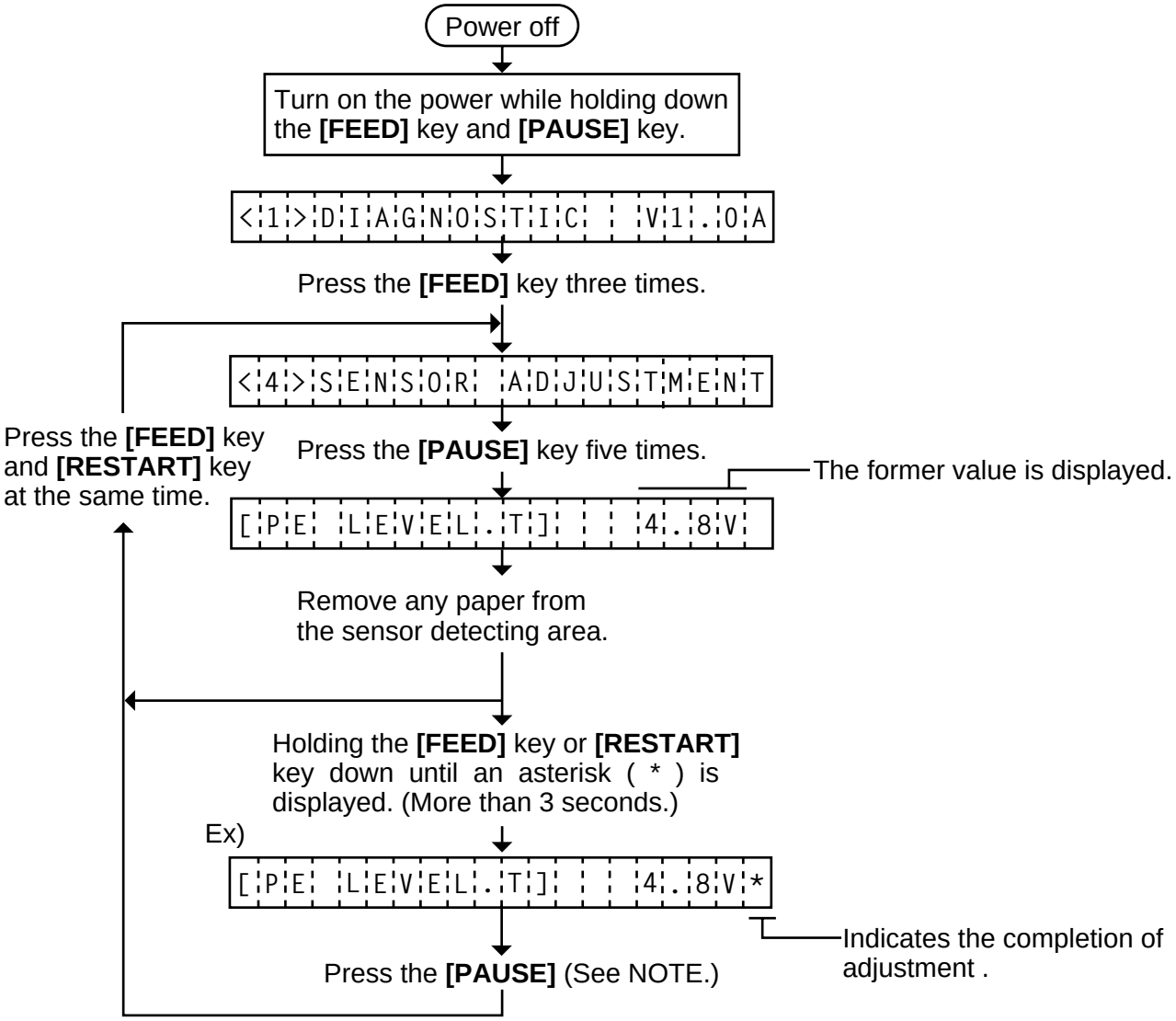
Paper end setting should be performed after replacing the CPU PC board or changing the tag paper to other maker's one, or when a paper feed error occurs.


Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.0A
Press the **[FEED]** key three times.
<4>SENSOR ADJUSTMENT
Press the **[FEED]** key and **[RESTART]** key at the same time.
Press the **[PAUSE]** key four times.
The former value is displayed.
[PE LEVEL.R] 4.3V
Remove any paper from the sensor detecting area.
Holding the **[FEED]** key or **[RESTART]** key down until an asterisk (*) is displayed. (More than 3 seconds.)
Ex)
[PE LEVEL.R] 4.3V*
(See NOTE.)
Indicates the completion of adjustment .
Press the **[PAUSE]** key for Paper End Setting for Feed Gap Sensor

NOTE: *Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.*

6.5.5 Paper End Setting for Feed Gap Sensor

Paper end setting should be performed after replacing the CPU PC board or changing the label to other maker's one, or when a paper feed error occurs.


Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.0A
Press the **[FEED]** key three times.
<4>SENSOR ADJUSTMENT
Press the **[PAUSE]** key five times.
The former value is displayed.
[PE LEVEL.T] 4.8V
Press the **[FEED]** key and **[RESTART]** key at the same time.
Remove any paper from the sensor detecting area.
Holding the **[FEED]** key or **[RESTART]** key down until an asterisk (*) is displayed. (More than 3 seconds.)
Ex)
[PE LEVEL.T] 4.8V*
Indicates the completion of adjustment .
Press the **[PAUSE]** (See NOTE.)

NOTE: *Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.*

6.6 RAM CLEAR MODE

In RAM clear mode, various data written on the EEP-ROM can be initialized. There are two clear functions; Maintenance counter clear and parameter clear in the parameter setting mode. After referring to the following table specify and clear or initialize the data.

■ **RAM Clear Mode Table**

<table>
<tr><th>Mode Name</th><th>Function</th></tr>
<tr><td>NO RAM CLEAR</td><td>If you enter the RAM clear mode by mistake, specify this mode to escape from the RAM clear mode without executing RAM clear.</td></tr>
<tr><td>MAINTE. COUNTER CLEAR</td><td>After replacing the print head, cutter module, ribbon feed/rewind motor, solenoid and CPU PC Board, clear the maintenance counter. The following data will be cleared to zero. Confirmation can be made through the maintenance counter procedure in self test mode. (See NOTE 1 and 2.)
<table>
<tr><th>Item</th><th>Initial Value</th></tr>
<tr><td>Media distance covered</td><td>0.0 km</td></tr>
<tr><td>Print distance</td><td>0.0 km</td></tr>
<tr><td>Cut count</td><td>0 time</td></tr>
<tr><td>Head up and down count</td><td>0 time</td></tr>
<tr><td>Ribbon motor driving time</td><td>0 hour</td></tr>
<tr><td>Solenoid driving time</td><td>0 hour</td></tr>
<tr><td>Take-up Motor driving time</td><td>0 hour</td></tr>
<tr><td>RS-232C hardware error count</td><td>0 time</td></tr>
<tr><td>System error count</td><td>0 time</td></tr>
<tr><td>Momentary power failure count</td><td>0 time</td></tr>
</table></td></tr>
<tr><td>PARAMETER CLEAR</td><td>This clear should be employed when initializing the following parameters to the settings before shipment. Confirmation can be made through the automatic diagnostic procedure in self test mode. (See NOTE 1 and 2.)
<table>
<tr><th>Item</th><th>Initial Value</th></tr>
<tr><td>Feed length fine adjustment (PC)</td><td>0.0 mm</td></tr>
<tr><td>Cut/strip position fine adjustment (PC)</td><td>0.0 mm</td></tr>
<tr><td>Back feed length fine adjustment (PC)</td><td>0.0 mm</td></tr>
<tr><td>Print tone fine adjustment (Thermal transfer) (PC)</td><td>0 step</td></tr>
<tr><td>Print tone fine adjustment (Thermal direct) (PC)</td><td>0 step</td></tr>
<tr><td>Ribbon motor drive voltage fine adjustment (Take-up) (PC)</td><td>0</td></tr>
<tr><td>Ribbon motor drive voltage fine adjustment (Feed) (PC)</td><td>0</td></tr>
<tr><td>Feed length fine adjustment (KEY)</td><td>0.0 mm</td></tr>
<tr><td>Cut/strip position fine adjustment (KEY)</td><td>0.0 mm</td></tr>
<tr><td>Back feed length fine adjustment (KEY)</td><td>0.0 mm</td></tr>
<tr><td>Print tone fine adjustment (Thermal transfer) (KEY)</td><td>0 step</td></tr>
</table></td></tr>
</table>

Mode Name	Function
PARAMETER CLEAR	

Item		Initial Value
Print tone fine adjustment (Thermal direct) (KEY)		0 step
Ribbon motor drive voltage fine adjustment (Take-up) (Key)		0
Ribbon motor drive voltage fine adjustment (Feed) (Key)		0
X axis fine adjustment		0.0 mm
Threshold manual fine adjustment for the black mark sensor		1.4 V
Threshold manual fine adjustment for the feed gap sensor		1.0 V
Character code selection		PC-850
Font zero selection		"0" (without slash)
Control code selection		Auto.
Ribbon type selection		Trans.
Strip wait status setting		1
Baud rate		9600 bps
Data length	QP/JA Type	8 bits
	QP Type	7 bits
Stop bit		1 bit
Parity	QP Type	None
	QQ/JA Type	EVEN
Transmission control mode	QP/JA Type	XON/XOFF+READY/ BUSY mode
	QQ Type	READY/BUSY DTR mode
Language Selection for LCD	QP Type	English
Message	QQ Type	English
Auto forward wait in cut mode		OFF
Head up ON/OFF setting in cut mode		OFF
Ribbon saving module selection		ON
Auto print head broken element check		OFF
[FEED] key function selection		feeds a piece of paper
Status response		ON
Label pitch		76.2 mm
Effective printing length		74.2 mm
Effective printing width		213.3 mm
Print type		Thermal Transfer
Sensor type		Transmissive sensor (Feed gap sensor)
Feed Speed		4 inch/sec.

<table>
<tr><th>Mode Name</th><th>Function</th></tr>
<tr><td>PARAMETER CLEAR</td><td>
<table>
<tr><th>Item</th><th>Initial Value</th></tr>
<tr><td>Issue mode</td><td>Standard
(Batch printing without Cut)</td></tr>
<tr><td>PC save automatic calling</td><td>ON</td></tr>
<tr><td>Kanji code</td><td>TYPE 1</td></tr>
<tr><td>EURO font code</td><td>B0H</td></tr>
<tr><td>Web printer function selection</td><td>OFF</td></tr>
<tr><td>Media Sensor Selection</td><td>Fixed Type</td></tr>
</table>
</td></tr>
</table>

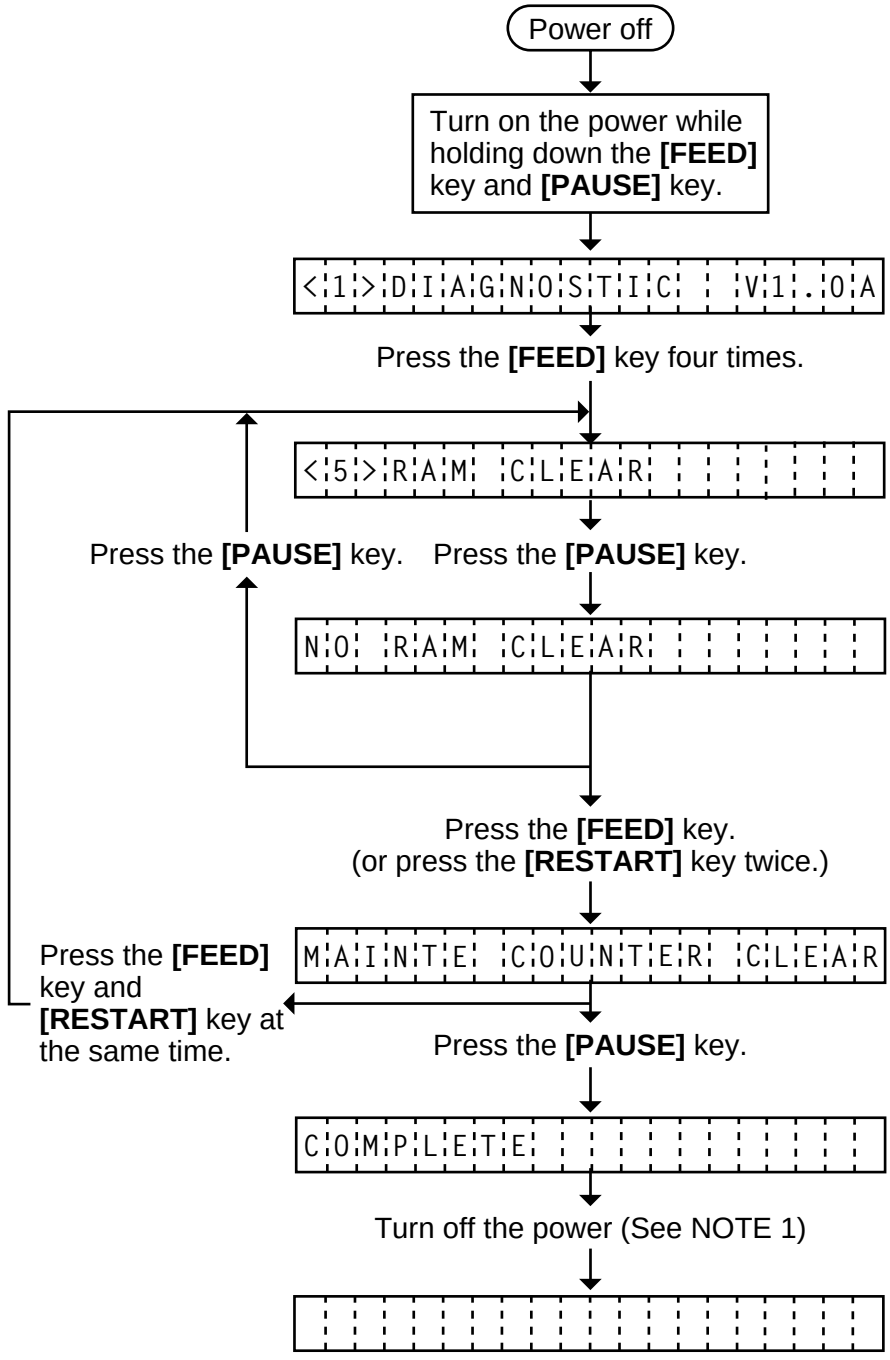
NOTES: *1. Total media distance covered (TL FEED) and the adjustment value for the sensors cannot be cleared.*

2. Data stored on the flash memory card cannot be cleared with this procedure. To clear data on the flash memory card, send the format command to initialize the card. For details, refer to the External Equipment Interface Specification.

3. For data to be cleared in the RAM clear mode, refer to the RAM clear mode table.

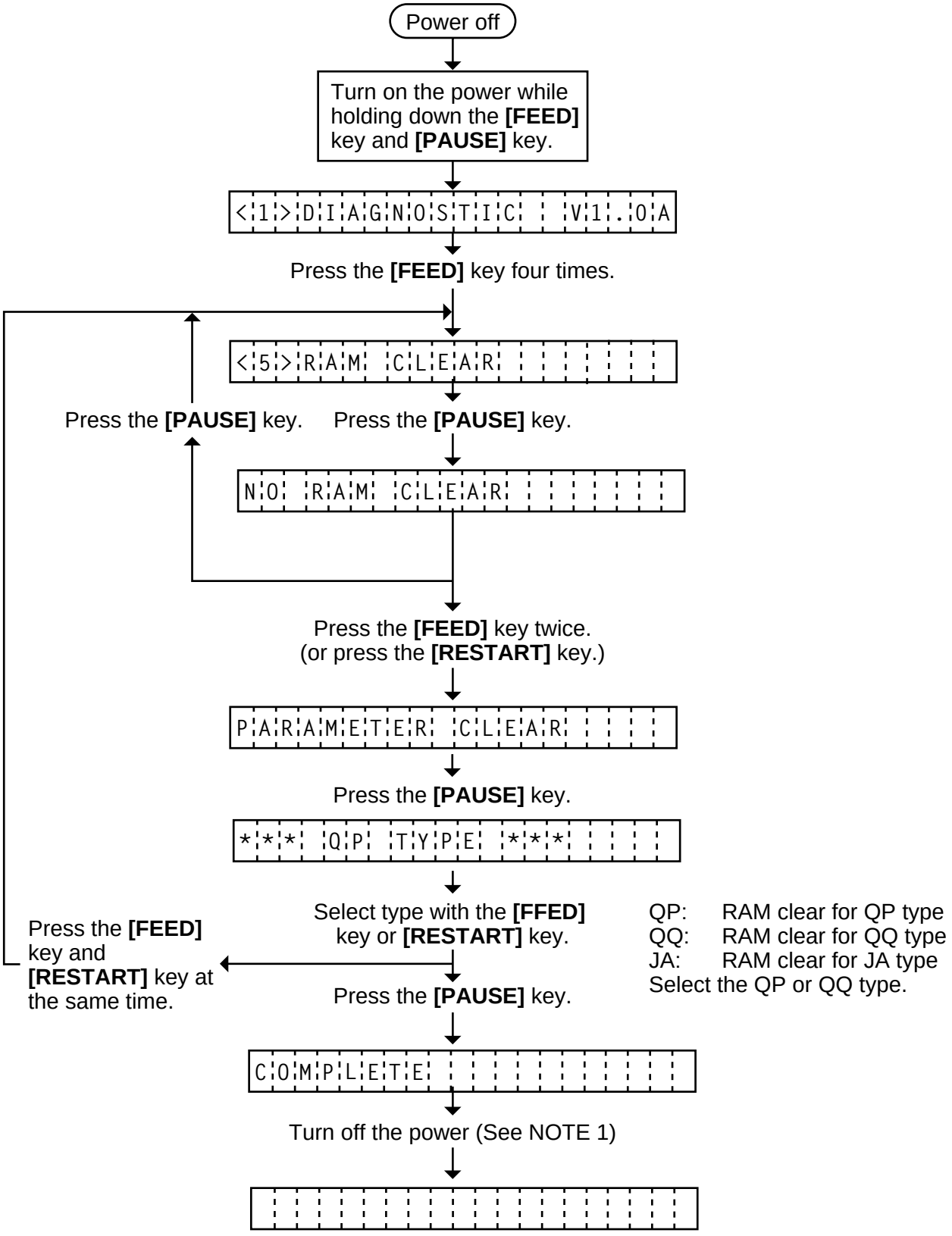
4. After RAM clear is performed, the threshold setting value will turn to the default (0). When using pre-printed labels, be sure to set the threshold after referring to the Owner's Manual.

6.6.1 Maintenance Counter Clear


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key four times.
<5>RAM CLEAR
Press the [PAUSE] key.
Press the [PAUSE] key.
NO RAM CLEAR
Press the [FEED] key.
(or press the [RESTART] key twice.)
MAINTE COUNTER CLEAR
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
COMPLETE
Turn off the power (See NOTE 1)

NOTE: *1. Confirm that "COMPLETE" is displayed, then turn the power off.*

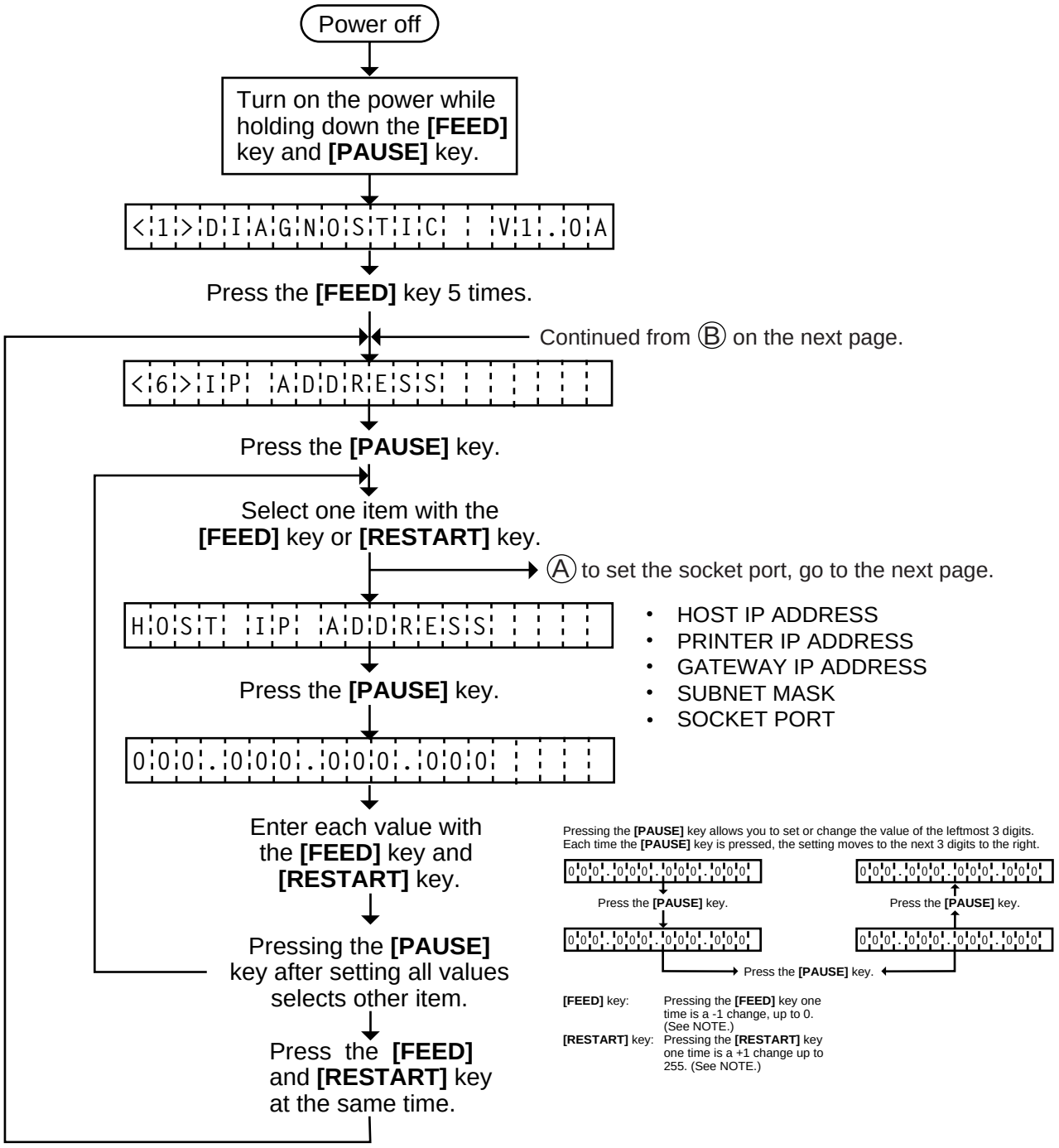
6.6.2 Parameter Clear


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key four times.
<5>RAM CLEAR
Press the [PAUSE] key.
Press the [PAUSE] key.
NO RAM CLEAR
Press the [FEED] key twice.
(or press the [RESTART] key.)
PARAMETER CLEAR
Press the [PAUSE] key.
QP TYPE
Select type with the [FFED] key or [RESTART] key.
QP: RAM clear for QP type
QQ: RAM clear for QQ type
JA: RAM clear for JA type
Select the QP or QQ type.
Press the [FEED] key and [RESTART] key at the same time.
Press the [PAUSE] key.
COMPLETE
Turn off the power (See NOTE 1)

NOTE: *Confirm that "COMPLETE" is displayed, then turn the power off.*

6.7 IP ADDRESS SETTING MODE

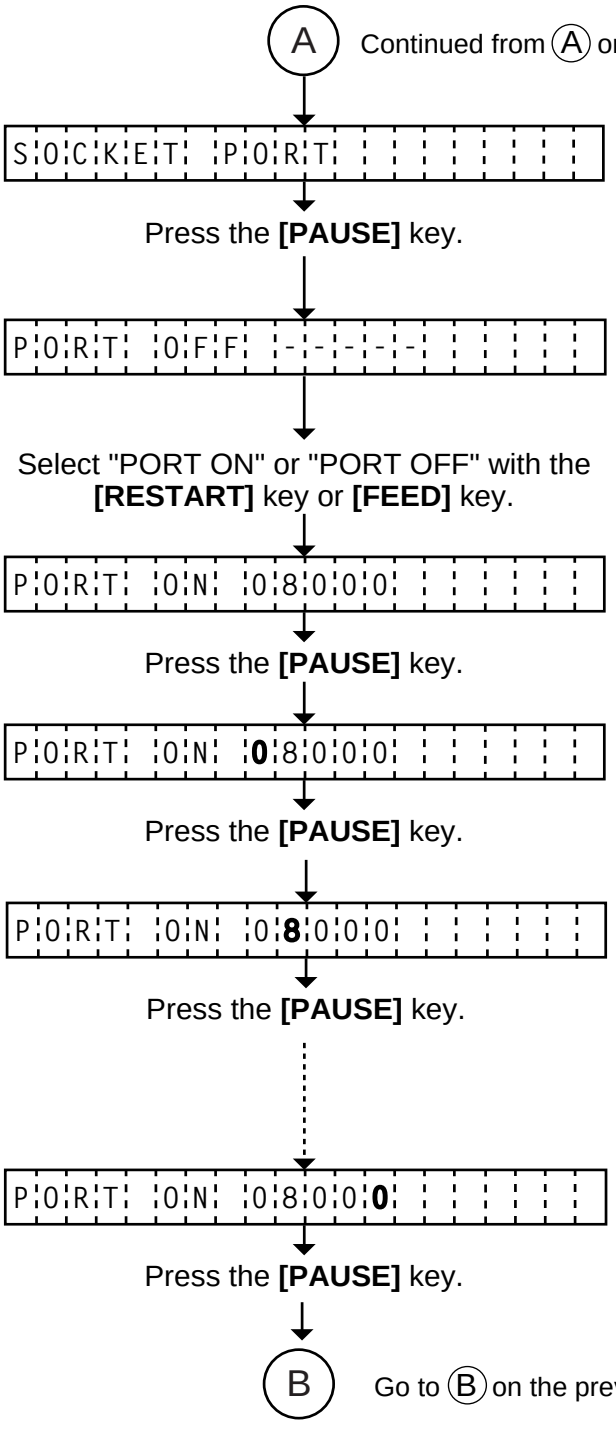
Host IP Address, Printer IP Address, Gateway IP Address, SUBNET mask, and Socket Port setting are available in this mode.


Power off
Turn on the power while holding down the [FEED] key and [PAUSE] key.
<1>DIAGNOSTIC V1.0A
Press the [FEED] key 5 times.
Continued from Ⓑ on the next page.
<6>IP ADDRESS
Press the [PAUSE] key.
Select one item with the [FEED] key or [RESTART] key.
Ⓐ to set the socket port, go to the next page.
HOST IP ADDRESS
Press the [PAUSE] key.
000.000.000.000
Enter each value with the [FEED] key and [RESTART] key.
Pressing the [PAUSE] key after setting all values selects other item.
Press the [FEED] and [RESTART] key at the same time.
• HOST IP ADDRESS
• PRINTER IP ADDRESS
• GATEWAY IP ADDRESS
• SUBNET MASK
• SOCKET PORT
Pressing the [PAUSE] key allows you to set or change the value of the leftmost 3 digits.
Each time the [PAUSE] key is pressed, the setting moves to the next 3 digits to the right.
Press the [PAUSE] key.
Press the [PAUSE] key.
Press the [PAUSE] key.
[FEED] key: Pressing the [FEED] key one time is a -1 change, up to 0. (See NOTE.)
[RESTART] key: Pressing the [RESTART] key one time is a +1 change up to 255. (See NOTE.)

NOTES: *1. 0 to 255 are set into each IP address setting value.*

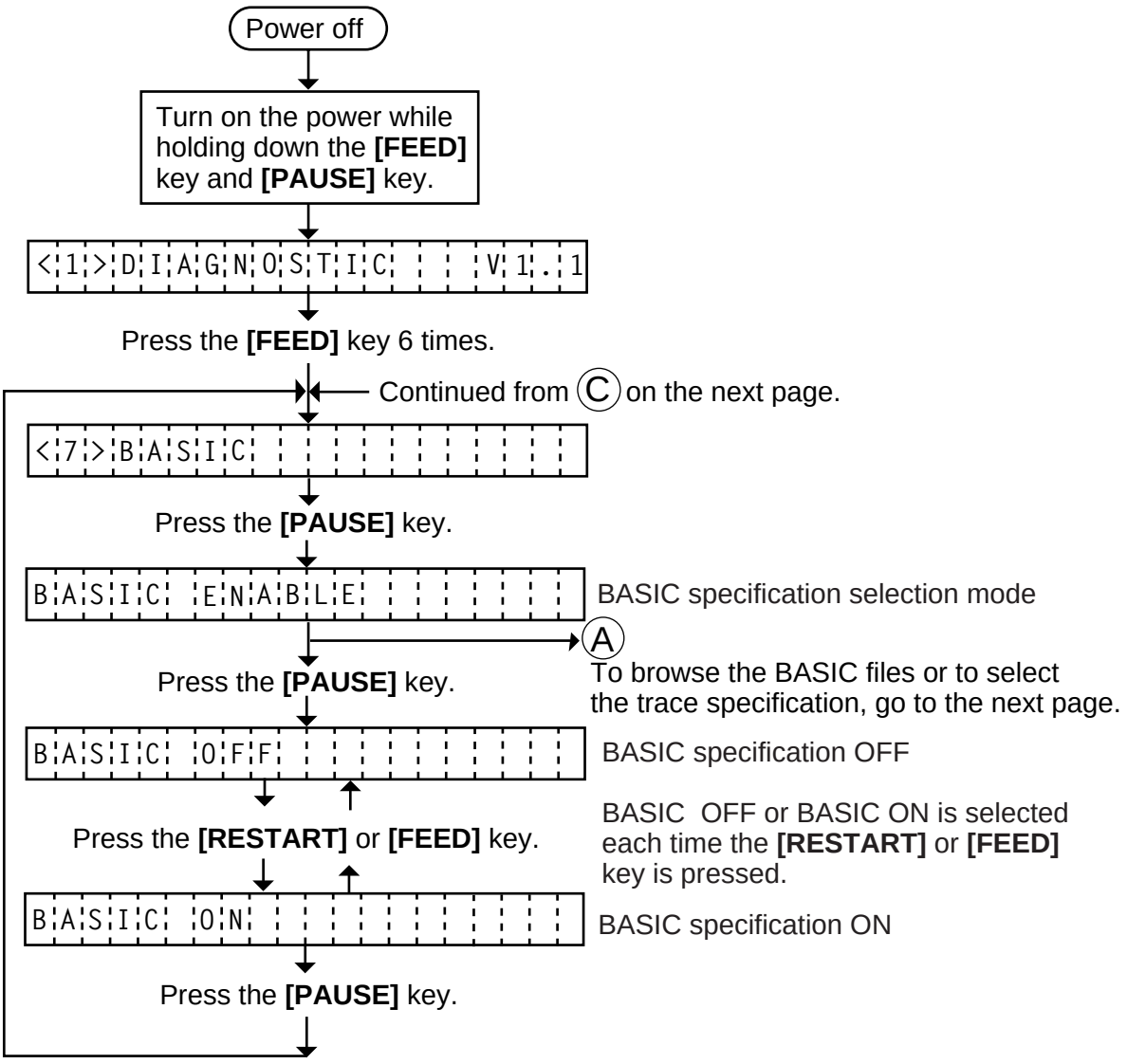
2. The factory-set initials for each parameter setting are as follows:

Parameter	Initial
HOST IP ADDRESS	192. 168. 10. 10
PRINTER IP ADDRESS	192. 168. 10. 20
GATEWAY IP ADDRESS	0. 0. 0. 0
SUBNET MASK	255. 255. 255. 0

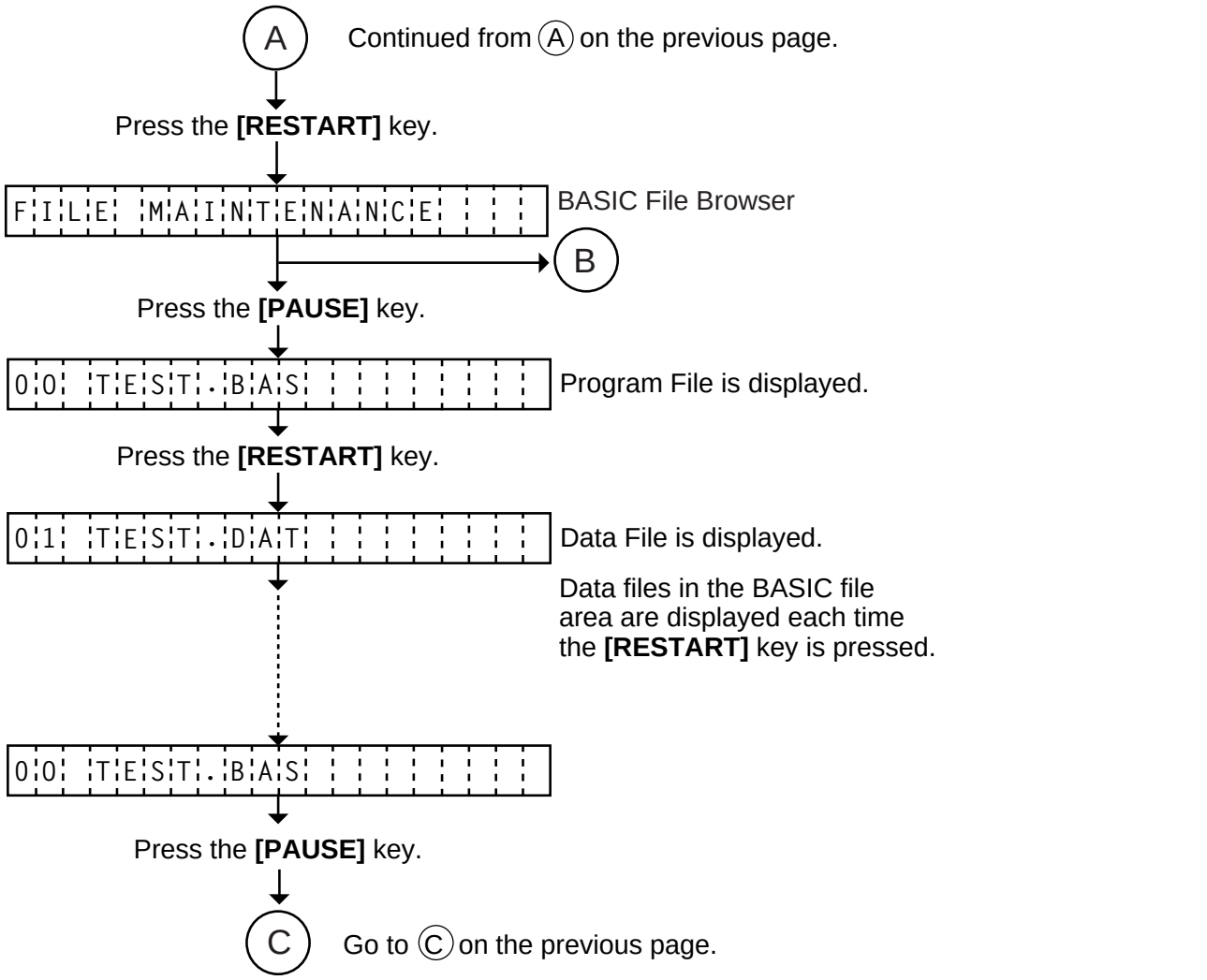

A
Continued from Ⓐ on the previous page.
SOCKET PORT
Socket communication port setting.
Press the [PAUSE] key.
PORT OFF ----
Select "PORT ON" or "PORT OFF" with the [RESTART] key or [FEED] key.
ON: Available
OFF: Unavailable
PORT ON 08000
When "PORT ON" is selected, a port number is displayed. Pressing the [PAUSE] key allows the port number setting.
Press the [PAUSE] key.
PORT ON 08000
Enter the 5th digit of the port number with the [FEED] key or [RESTART] key.
[FEED] key: Pressing the [FEED] key on time causes a -1 change, up to 0.
[RESTART] key: Pressing the [RESTART] key one time causes a +1 change, up to 9.
Press the [PAUSE] key.
PORT ON 08000
Pressing the [PAUSE] key allows the 4th digit setting.
Press the [PAUSE] key.
PORT ON 08000
Repeat this procedure unitl the 1st digit setting has been completed. After setting the 1st digit, press the [PAUSE] key to return the display to "<6>IP ADDRESS".
Press the [PAUSE] key.
B
Go to Ⓑ on the previous page.

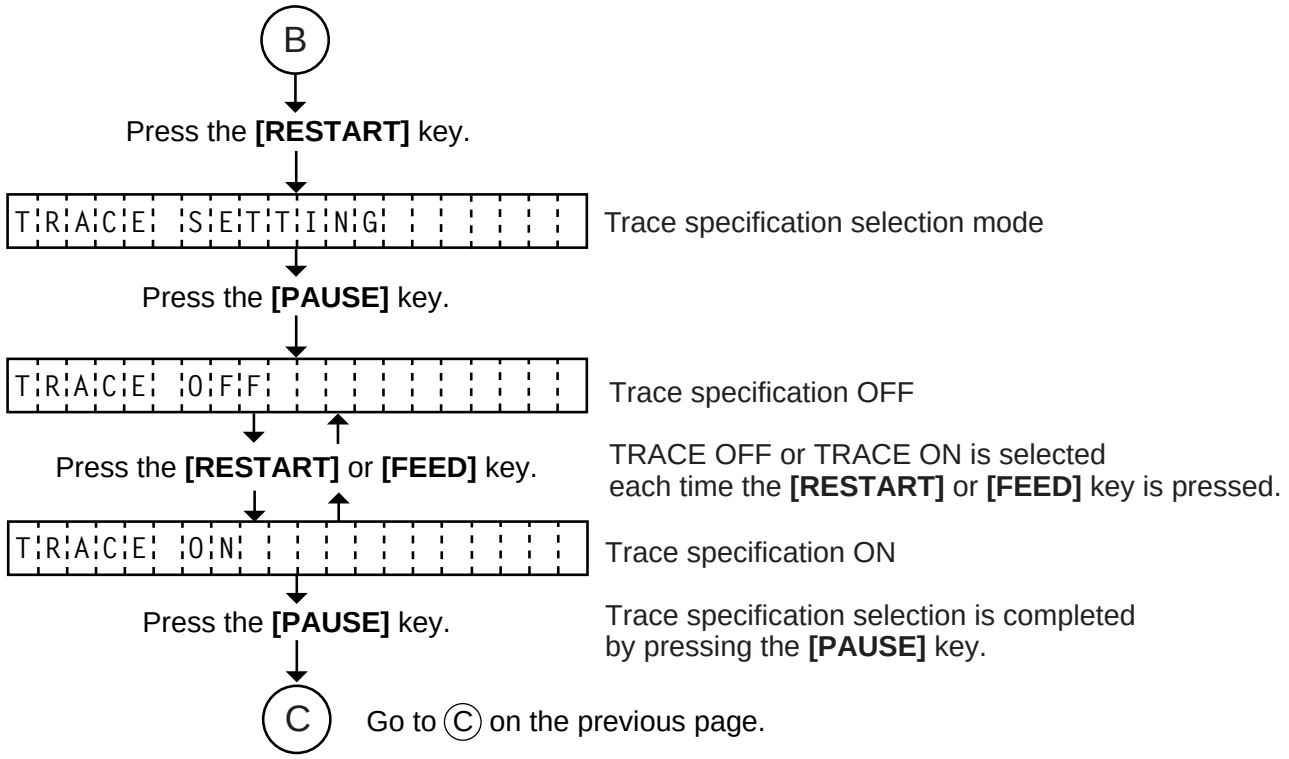
6.8 BASIC SETTING MODE

Setting the BASIC specification and Trace specification to be enabled/disabled, and displaying the program file, data file, and area file are available in this mode.


Power off
Turn on the power while holding down the **[FEED]** key and **[PAUSE]** key.
<1>DIAGNOSTIC V1.1
Press the **[FEED]** key 6 times.
Continued from C on the next page.
<7>BASIC
Press the **[PAUSE]** key.
BASIC ENABLE
BASIC specification selection mode
A
Press the **[PAUSE]** key.
To browse the BASIC files or to select the trace specification, go to the next page.
BASIC OFF
BASIC specification OFF
Press the **[RESTART]** or **[FEED]** key.
BASIC OFF or BASIC ON is selected each time the **[RESTART]** or **[FEED]** key is pressed.
BASIC ON
BASIC specification ON
Press the **[PAUSE]** key.

NOTE: *This function is available on the machine V1.1 or later.*


A
Continued from Ⓐ on the previous page.
Press the **[RESTART]** key.
FILE MAINTENANCE
BASIC File Browser
B
Press the **[PAUSE]** key.
00 TEST.BAS
Program File is displayed.
Press the **[RESTART]** key.
01 TEST.DAT
Data File is displayed.
Data files in the BASIC file area are displayed each time the **[RESTART]** key is pressed.
00 TEST.BAS
Press the **[PAUSE]** key.
C
Go to Ⓒ on the previous page.

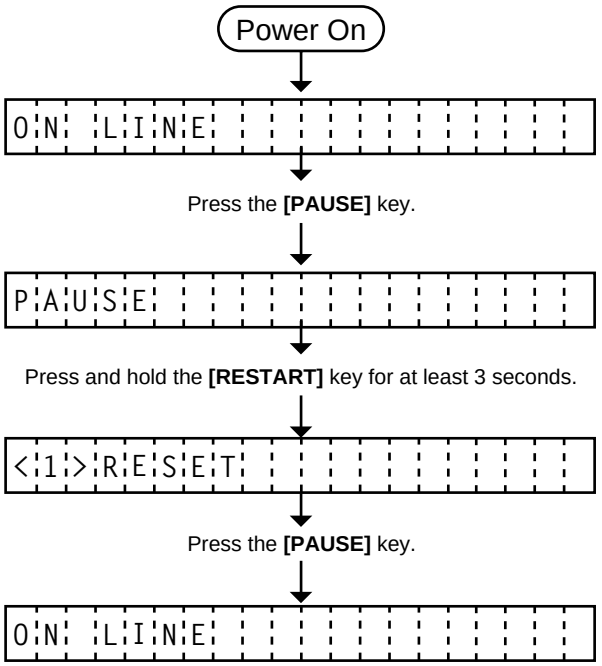

B
Press the **[RESTART]** key.
TRACE SETTING
Trace specification selection mode
Press the **[PAUSE]** key.
TRACE OFF
Trace specification OFF
Press the **[RESTART]** or **[FEED]** key.
TRACE OFF or TRACE ON is selected each time the **[RESTART]** or **[FEED]** key is pressed.
TRACE ON
Trace specification ON
Press the **[PAUSE]** key.
Trace specification selection is completed by pressing the **[PAUSE]** key.
C
Go to Ⓒ on the previous page.

7. ON LINE OPERATION

7.1 RESET OPERATION

This operation restores the printer to the initial status.

- Sample operation



The printer is in stand-by or printing.

The printer enters the pause state.

A reset menu is displayed.

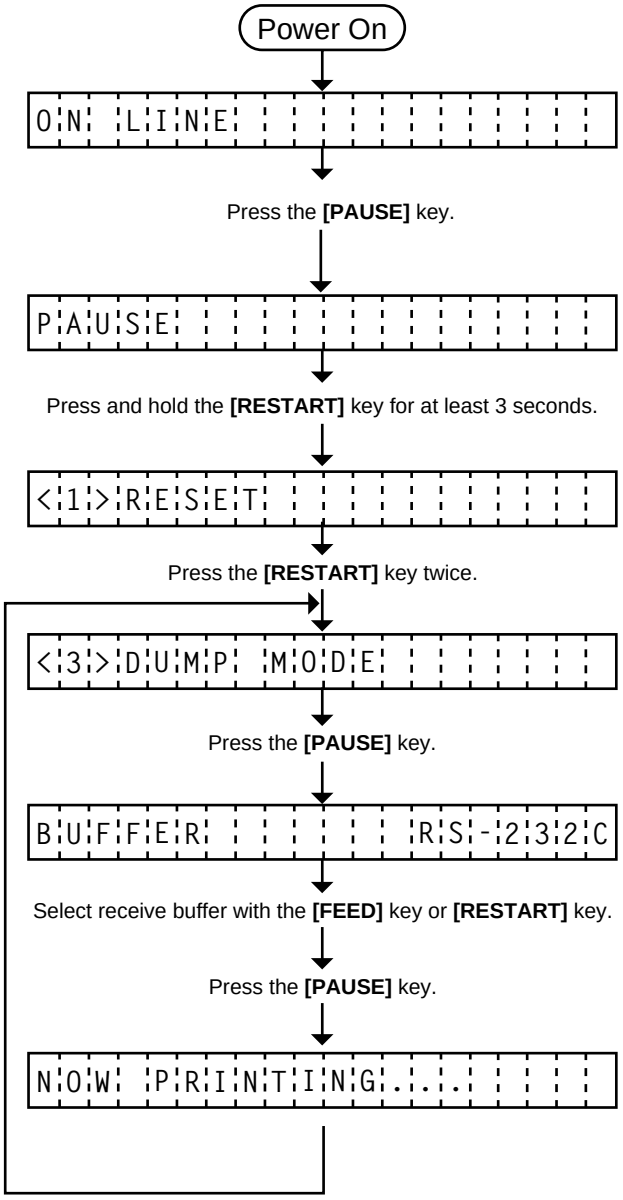
The printer is restored to the initial state.

NOTES: *1. If the **[RESTART]** key is released within 3 seconds in the pause state, the printer will resume printing without displaying the reset menu.*

*2. If the **[RESTART]** key is released within 3 seconds in the error state, the printer will remain in error. However, in case of a communication error or command error, the printer will restore to the initial status.*

7.2 Dump Mode

Receive buffer data of RS-232C I/F, Centronics I/F, Network I/F, and BASIC Interpreter are dumped in this mode. Communication data and Network connection can be checked.



The printer is in stand-by or printing.

The printer enters the pause state.

A reset menu is displayed.

A dump mode menu is displayed.

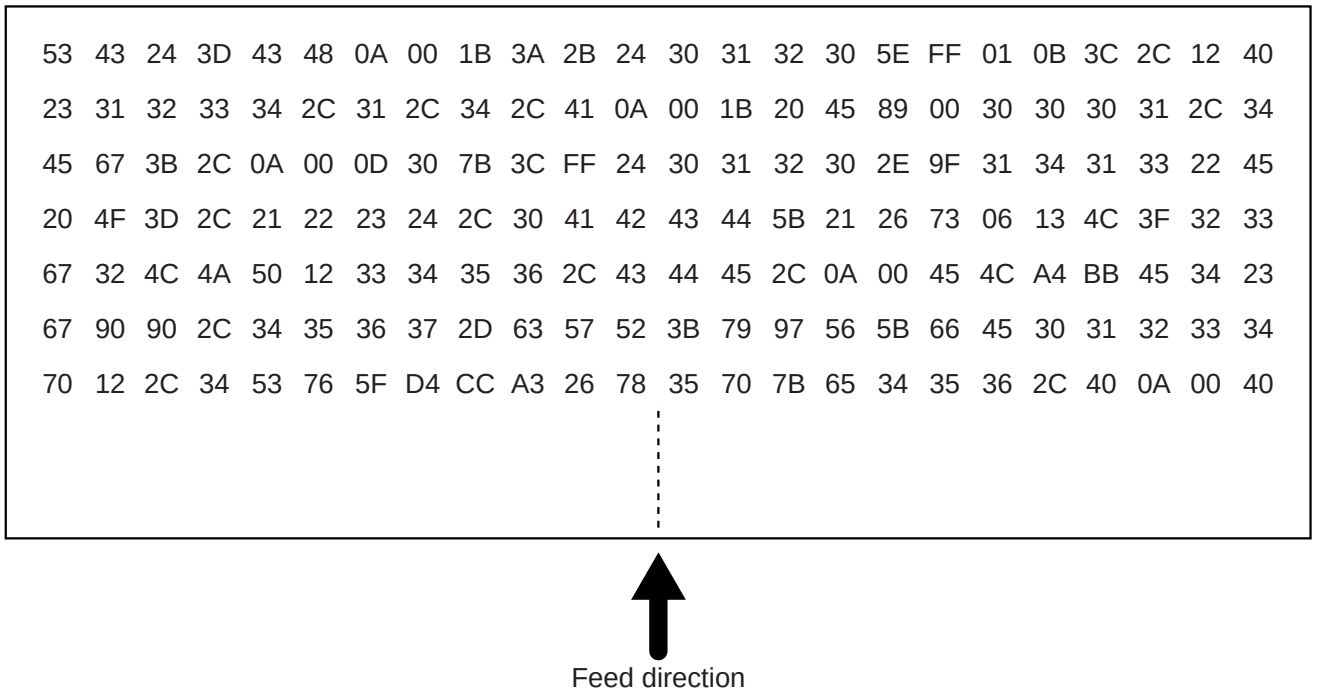
RS-232C:	RS-232C receive buffer
NETWORK:	Network I/F receive buffer
CENTRO:	Centronics I/F receive buffer
BASIC 1:	BASIC Interpreter (I/F→Interpreter buffer)
BASIC 2:	BASIC Interpreter (Interpreter→Printer buffer)

Receive buffer data is printed. After that, the display restores the dump mode menu.

Receive buffer data is printed on the following condition.

■ Sample Print

[Print condition]
- Print width: 4.2"
- Sensor: No sensor
- Print speed: 4"/sec.
- Print method (Thermal transfer/Thermal direct) which is in used is applied.
- 24-byte data is printed on one line.



Receive buffer size

RS-232C:	10K bytes (427 lines)
Centronics I/F:	10K bytes (427 lines)
Network I/F:	8K bytes (342 lines)
BASIC 1:	4K bytes (171 lines)
BASIC 2:	4K bytes (171 lines)

NOTE: *When an error occurs on printing, an error message is displayed and the printing stops. Pressing* ***[PAUSE]*** *key releases the error and restores the display to "<3> DUMP MODE", however an auto reissue is not performed after that.*

8. PROGRAM DOWN LOAD

This section provides step by step instructions on how to setup and download the firmware to the B-882 thermal printer. The firmware download will be made from a Personal Computer via the RS-232C interface and centronics interface of the printer.

8.1 OUTLINE OF FEATURES

The software for performing the program download will allow the download of the Firmware (Boot Program, Application Program, and Character Generator) from the provided FDK. The software will be run on a standard PC and communication to the B-882 thermal printer will be via the RS-232C interface and the centronics interface.

Firmware Download - The Boot Program, Application Program, and Character Generator are installed into the B-882 printer's Flash memory prior to being shipped to the customer. However, if specications should change at a later date, this software will allow downloading firmware updates to the B-882 printer.

8.2 SOFTWARE INSTALLATION

Before you can communicate from your PC to the B-882 printer, you must first copy the "Install Program for B-NX" from the two FDKs provided to the hard disk of your PC.

Example

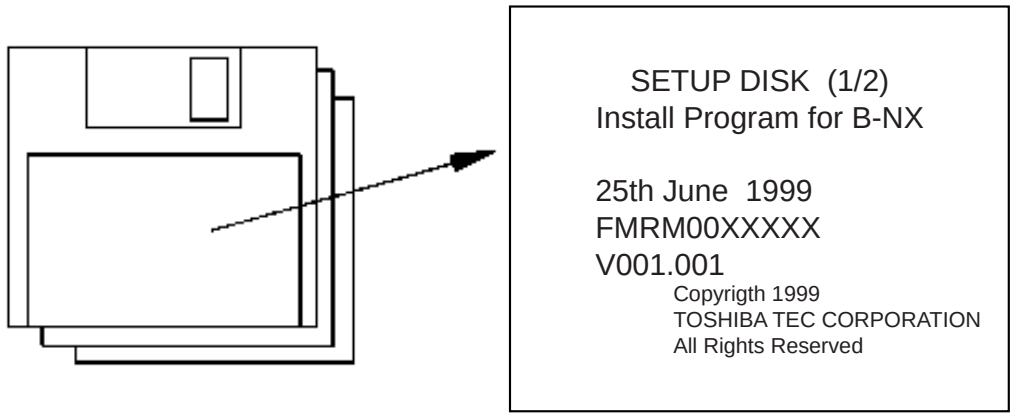


Fig. 8-1

8.2.1 System Requirements

System

IBM Compatible PC running Windows 95® or Windows 98®. (Note: Windows 3.1 is not supported)

Note: *Windows 95 and Windows 98 are registered trademarks of the Microsoft Corporation.*

Installed memory of 16MB minimum (32MB recommended)

Available Hard Disk space of 10MB

Interface

The RS-232C interface and centronics interface.

8.2.2 Setup

Setup Disk

Make sure that you have all two diskettes available of the “Install Program for B-NX”. (Refer to the Fig. 8-1 in paragraph 8.2 on the preceding page).

Installation Procedure

1. While running Windows 95 or Windows 98, insert Setup Disk (1/2) into the PC floppy drive.
2. Click on the START button then highlight RUN and click on RUN.
3. When the RUN display appears, as in Fig. 8-2, type in A:\SETUP and click on OK.

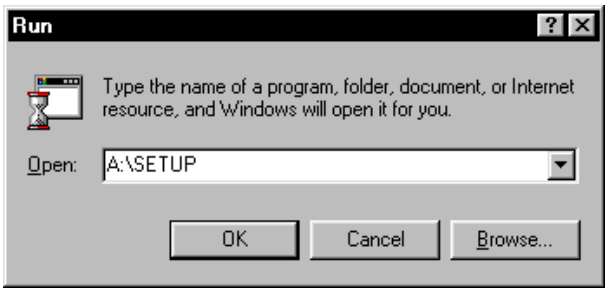


Fig. 8-2

4. When requested, insert Setup Disk (2/2).

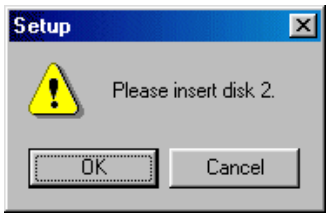


Fig. 8-3

5. After all the files have been copied, the following message screen will automatically appear. Click on OK to continue.

Fig. 8-4

6. After click OK in the previous screen, the following message screen appears. Click on the button to accept the directory or change the directory if desired.

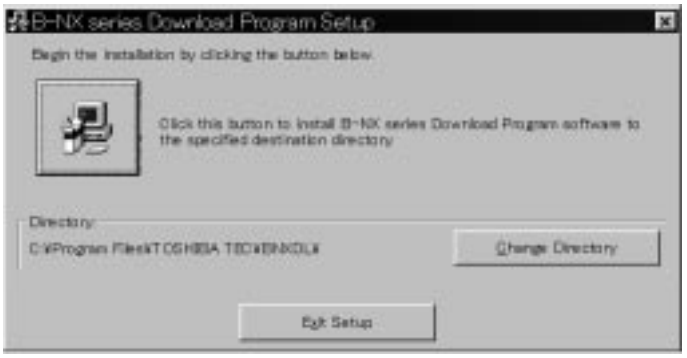

B-NX series Download Program Setup
Begin the installation by clicking the button below.
Click this button to install B-NX series Download Program software to the specified destination directory.
Directory
Change Directory...
Exit Setup

Fig. 8-5

7. The following program group selection menu will appear. Click on the CONTINUE button.

B-NX series Download Program - Choose Program Group
Setup will add items to the group shown in the Program Group box. You can enter a new group name or select one from the Existing Groups list.
Program Group:
Existing Groups:
Accessories
Microsoft Developer Network
Microsoft Visual Basic 6.0
Microsoft Visual C++ 6.0
Microsoft Web Publishing
Online Services
StartUp
TOSHIBA TEC
Continue
Cancel

Fig. 8-6

8. When the install process is completed, the following screen display will appear. Click on the OK button to end the installation.

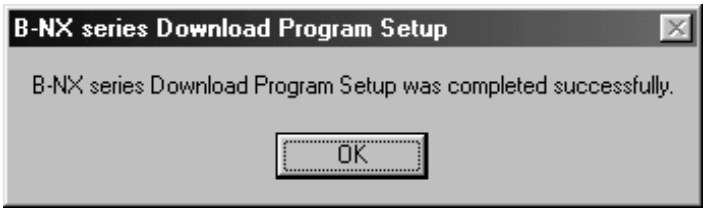


Fig. 8-7

8.3 FIRMWARE DOWNLOAD

The following paragraphs give the download procedure that the firmware is copied onto the PC hard disk before being transferred to the printer. First copy the download file (*.ROM) to the hard disk.

If the file format of the file installed onto the FDK is ":.EXE", double-click on it to decompress into ":.ROM" file.

If it ever becomes necessary to upgrade the firmware in the B-882 printer you will be supplied with a floppy disk containing the latest firmware revision similar to that shown in Fig. 8-8 below.

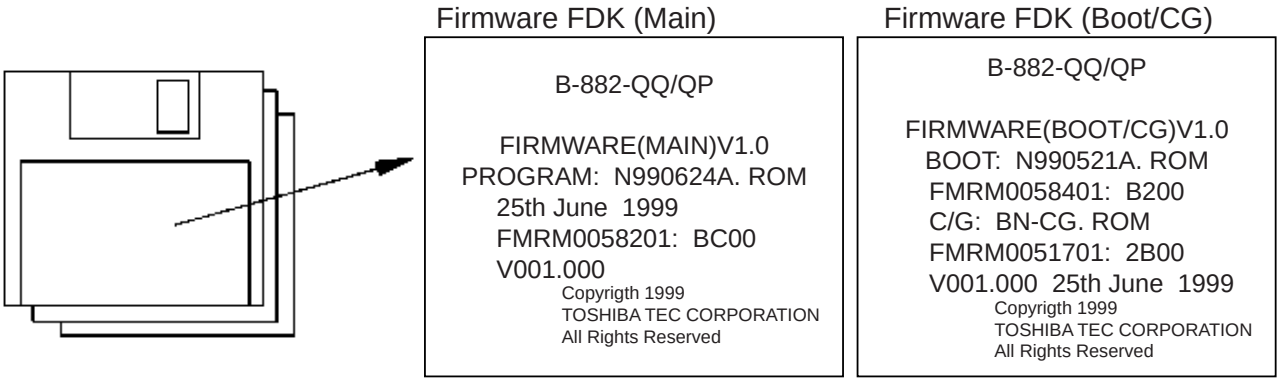
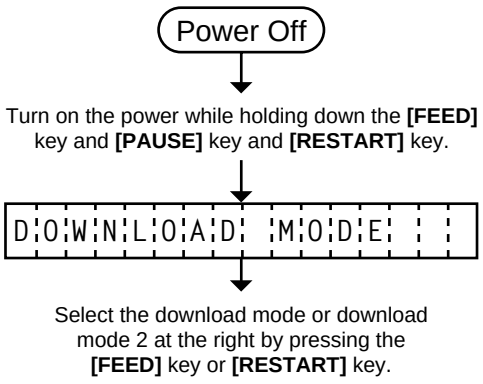


Fig. 8-8

NOTES:
1. *Check the current firmware version and checksum by performing the self-diagnostic printing in the System Mode. If the current firmware version and checksum are equal to those you just try to download, do not perform a downloading.*
2. *Prior to program files copy connect the B-882 printer to your PC with the Centronics I/F cable. Ccancel the network pass allocated to LPT 1 of the PC. Failure to do this will disable you from firmware download.*
3. *If the file format of the file installed into the FDK is "*.EXE", click it twice to decompress into "*.ROM" file.*

1. Turn on the printer power by the following procedure.


Power Off
Turn on the power while holding down the [FEED] key and [PAUSE] key and [RESTART] key.
D O W N L O A D M O D E
Select the download mode or download mode 2 at the right by pressing the [FEED] key or [RESTART] key.

A download mode menu is displayed.

- DOWNLOAD MODE
- DOWNLOAD MODE 2

2. Turn on the PC power and start up Windows.
3. Click on the START button to access the program menu.
4. Highlight “Programs” then highlight “TOSHIBA TEC” and click on B-NX Series Download Program as shown in the screen display of Fig. 8-9 below.

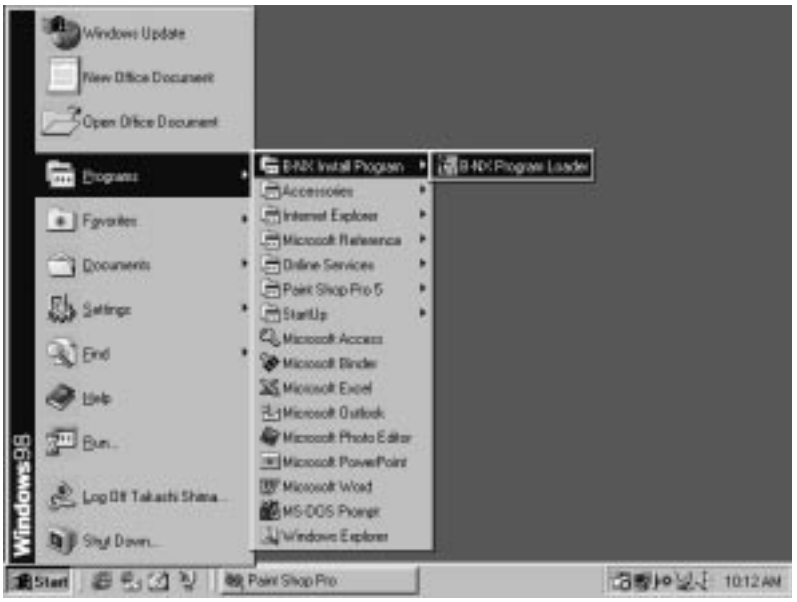


Fig. 8-9

5. As soon as you click on B-NX series download program, the screen will change to the initial screen of the Program Loader as shown in Fig. 8-10 below.

Fig. 8-10

6. Select the drive, directory, file name, extension, and applicable PC port for the firmware to be installed. (The following shows that C:\Program Files\TOSHIBA TEC\BNXDL\(N400310A.ROM will be downloaded by using LPT1 port.)

Fig. 8-11

7. Through the following procedure, you can set the default device and pass.

   (1) Click on “Setting” menu on the upper left of the initial screen of the Program Loader.

   (2) After clicking on the “Open setting Menu” in the previous screen, the B-NX series Download Program setting display screen will appear.

Fig. 8-12

Setting the default pass

1) Click on the “search” button.
2) Highlight the desired directory.
3) Click on the “select” button.
4) To end the default pass setting, click on the OK button. The selected pass will be displayed as a default afterward.

Fig. 8-13

Setting the default device

1) Highlight desired device.
2) To end the default device setting, click on the OK button. The selected device will be displayed as a default afterward.

Fig. 8-14

NOTES: *1. Communication parameters for COM1 and COM2 are fixed as follows.*
Baud Rate: 9600 bps
Parity: None
Stop Bit: 1 bit
2. A device selection is possible on the main screen display of Fig. 8-11, however, that setting will be cleared when the screen is terminated.

8. Execution of Download to Printer

(1) Highlight the file to be downloaded and click on the RUN button.

Fig. 8-15

(2) The following screen will appear.

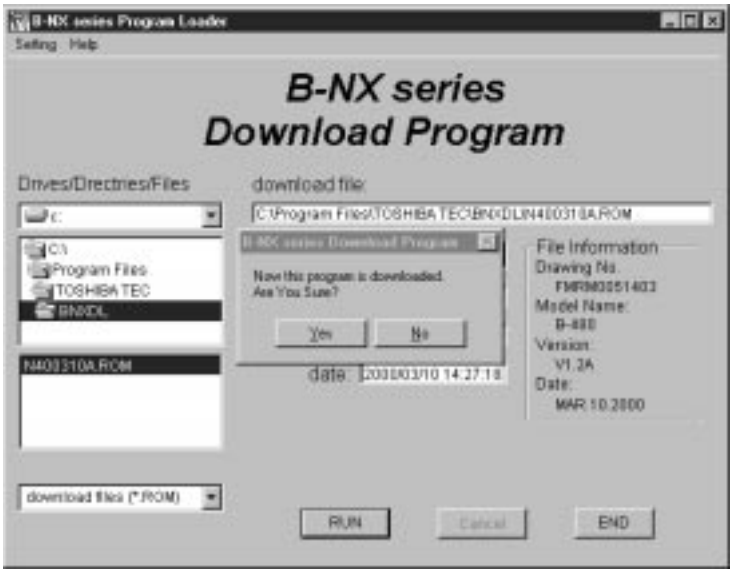


Fig. 8-16

(3) Click on the Yes button to begin the download. At this time the LCD on the B-880 printer changes from “DOWN LOAD MODE” to “NOW LOADING...”.

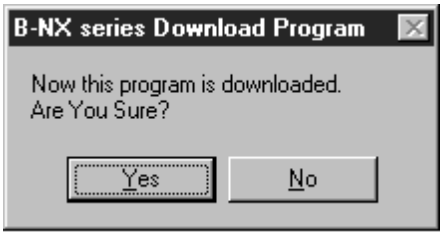


Fig. 8-17

NOTES: *1. If "NOW LOADING..." does not appear, finish the download program, turn the printer power off, and retry from Step 1).*

2. When "NOW LOADING..." is displayed and the downloading is in progress, never turn the printer power off or disconnect the cables. Even if a wrong file is downloaded by mistake, never stop downloading. After terminating the downloading, download the correct file.

(4) After about 10 seconds the following screen indicating the firmware is downloaded will apper.

Fig. 8-18

NOTES: *1. If an error occurs on the PC or pritner in the middle of downloading, retry from connection of the printer to the PC.*
2. If the PC hangs up or a power failure occurs, retry from connection of the printer to the PC.

(5) When the firmware download is completed, the screen will be changed to the following.

Fig. 8-19

(6) After a few seconds the LCD on the printer will change from “NOW LOADING...” to “ON LINE”. The printer will reboot automatically.

NOTE: *When the program install rate indicator on the PC returns to 0% after it reached 100%, and when the printer is in the ONLINE Mode, the downloading terminates successfully. After successful termination of the downloading, perform the following:*

- *Turn the printer power ON while pressing and holding the **[FEED]** and **[PAUSE]** keys to enter the System Mode.*
- *Confirm that the correct version of the software is displayed on the LCD.*
- *Perform a self-diagnostic printing and confirm that the correct version of the software has been downloaded.*

(7) Click on the END button to finish the download.

NOTES: *1. Only download command is available on downloading.*

2. In the "DOWNLOAD MODE", the firmware may not be downloaded from some kinds of PC. In this case, use the "DOWNLOAD MODE2". (Centronics Interface ACK-BUSY timing is different between "DOWNLOAD MODE" and "DOWNLOAD MODE2".)

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